

# UNIVERSITY PROGRAM MANAGEMENT INFORMATION SYSTEM

FY 1985

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Prepared by:

Office of Procurement  
Procurement Management Division  
Washington, D.C. 20546

## **IMPORTANT NOTICE**

This report is compiled primarily from information obtained from two internal NASA sources.

1. "CASE Report on Support of Colleges and Universities" (NASA Form 1356)
2. "Individual Procurement Action Report" (NASA Form 507).

Therefore, other sources should be used for completing Forms 507 or 1356.

# **NASA'S UNIVERSITY PROGRAM**

## **ACTIVE PROJECTS**

**FISCAL YEAR 1985**

**National Aeronautics and Space Administration  
Office of Procurement  
Procurement Management Division  
Washington, D.C. 20546**





# FOREWORD

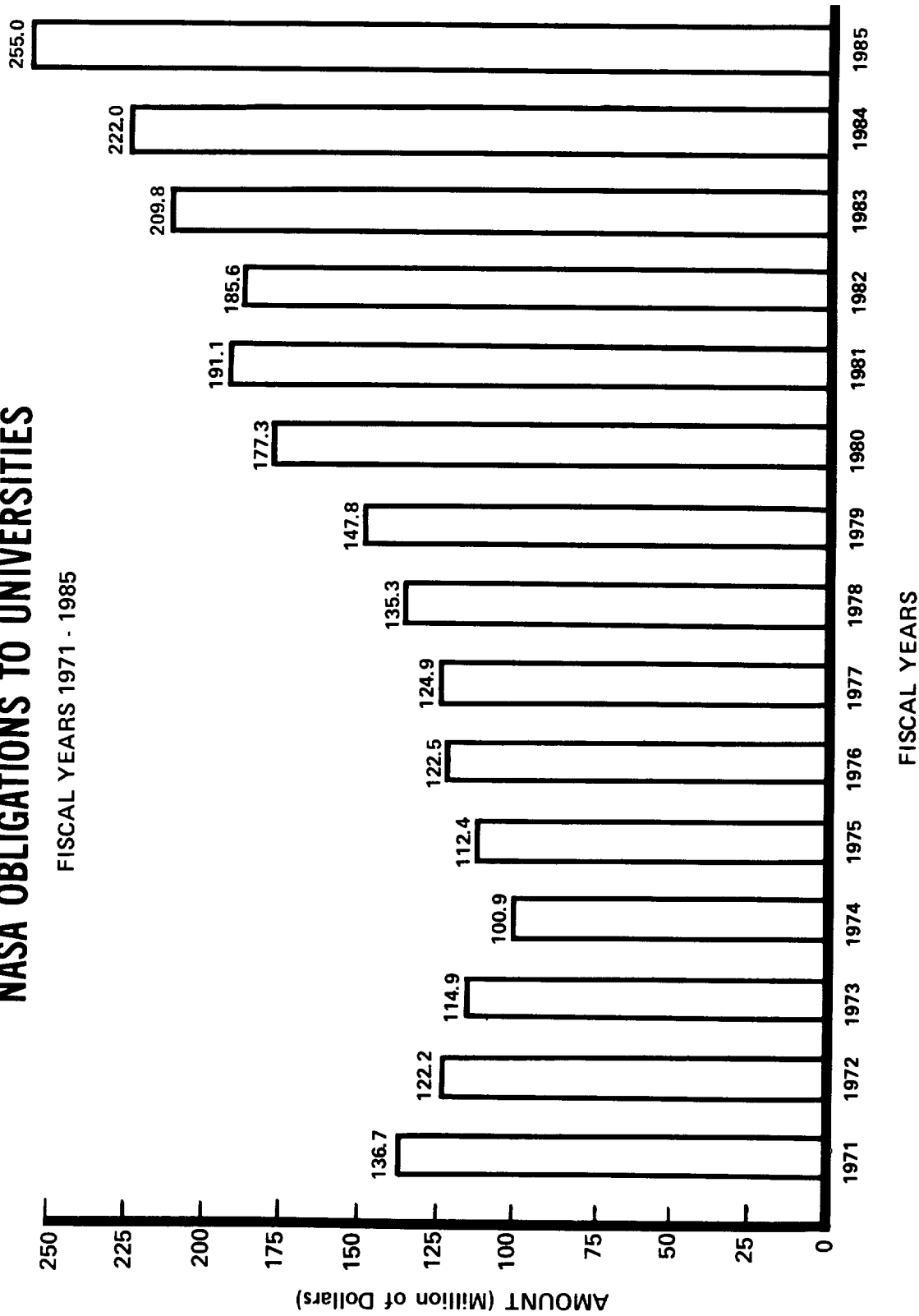
As basic policy NASA believes that colleges and universities should be encouraged to participate in the nation's space and aeronautics program to the maximum extent practicable. Indeed, universities are considered as partners with government and industry in the nation's aerospace program. NASA's objective is to have them bring their scientific, engineering, and social research competence to bear on aerospace problems and on the broader social, economic, and international implications of NASA's technical and scientific programs. It is expected that, in so doing, universities will strengthen both their research and their educational capabilities to contribute more effectively to the national well-being.

NASA Field Centers and certain Headquarters Program Offices provide funds for those R&D activities in universities which contribute to the mission needs of that particular NASA element. Although NASA has no predetermined amount of money to devote to university activities, the effort funded each year is substantial. (See the bar chart on the next page). This annual report is one means of documenting the NASA-university relationship, frequently denoted, collectively, as NASA's University Program.

The report was prepared by the Procurement Management Division, Office of Procurement, NASA Headquarters.

# NASA OBLIGATIONS TO UNIVERSITIES

FISCAL YEARS 1971 - 1985



NOTE: Excludes awards to California Institute of Technology for operation of the Jet Propulsion Laboratory.

FY 1971 includes \$15.0M in awards to Draper Lab.

FY 1972 includes \$5.7M in awards to Draper Lab.

FY 1973 includes \$5.2M in awards to Draper Lab.

In FY 1974 Draper Lab status changed from "university" to "nonprofit".

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This report includes data on projects active during Fiscal Year 1985.

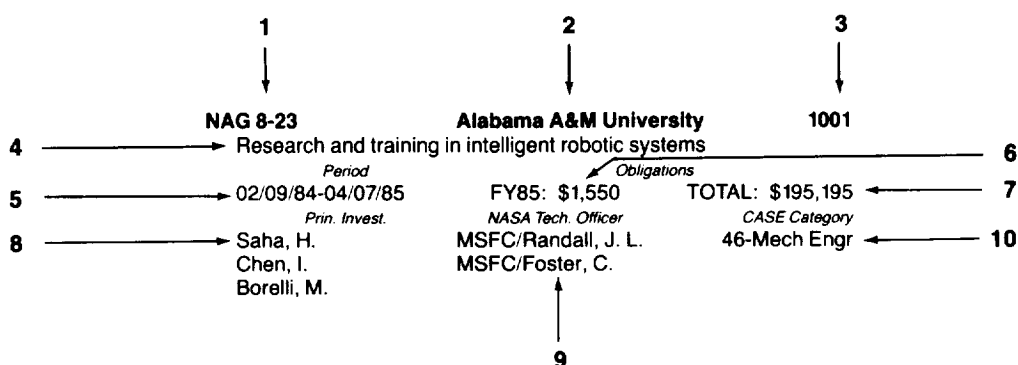
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# USER'S GUIDE

The University Program Report provides current information and related statistics for each grant/contract/cooperative agreement active during the report period. The following guidance is provided as an aid to the reader in readily locating material of interest and in optimizing the use of this document.

## I. Typical Citation



1. Agreement Number.\*
2. Institution Name.
3. Accession Number.
4. Brief work description.
5. Approximate period of performance.
6. Amount (if any) actually provided during the indicated fiscal year.
7. Total amount actually provided during the indicated period of performance.
8. Principal Investigator(s) at the educational institution.
9. NASA Technical Officer(s) and organizational location.
10. CASE Field of Science and Engineering code and name.

\*Uniquely identifies project. Prefixes denote type of instrument as follows:

Grants  
Cooperative Agreements  
Contracts  
Space Act Agreements  
NAG, NAGW, NGF, NGT, NGL, NGR, NSG  
NCC, NCCW  
DEN, NAS, NASR, NASW, NSR  
NCA

## II. NASA Installations

NASA installations are included in the citation as abbreviations (item 9). The following listing of installations will be useful to those desiring further information on specific projects.

<b>Abbrev.</b>	<b>Installation Name and Address</b>	<b>Telephone Number for Informantion</b>
ARC	Ames Research Center NASA Moffett Field, CA 94035	415/965-5000
DFRC	Dryden Flight Research Facility NASA P.O. Box 273 Edwards, CA 93523	805/258-3311
GSFC	Goddard Space Flight Center NASA Greenbelt, MD 20771	301/344-7000
JSC	Johnson Space Center NASA Houston, TX 77058	713/483-3111
KSC	Kennedy Space Center NASA Kennedy Space Center, FL 32899	305/867-7110
LARC	Langley Reserch Center NASA Hampton, VA 23665	804/865-2000
LERC	Lewis Research Center NASA 21000 Brookpark Road Cleveland, OH 44135	216/433-4000
MSFC	Marshall Space Flight Center NASA Marshall Space Flight Center, AL 35812	205/453-2121
NSTL	National Space Technology Laboratories NASA NSTL Station, MS 39529	601/688-2211
HQ	NASA Headquarters Washington, DC 20546	202/453-1000

The abbreviation for NASA Headquarters, HQ, usually carries a suffix, for example HQ-EB, which denotes a particular office code and general area of responsibility. A full listing of the suffix letters and information on NASA's organizational structure may be found in the NASA Headquarters Telephone Directory. (The Directory is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.)

### **III. CASE Fields of Science and Engineering**

The National Science Foundation (NSF) operates a government-wide system (CASE) for collecting and analyzing data on support to colleges and universities. Participating agencies report annually to NSF which in turn issues *Support to Universities, Colleges and Selected Nonprofit Institutions*. The CASE Fields, used in the extensive tabulations contained in that document, form the only consistent classification system for government sponsored research. The fields are listed in full in the Appendix.

### **IV. Cross-Index**

The cross-indexed Appendix provides rapid access to all projects in a particular area of endeavor, as defined by the CASE Fields. This listing is also easily used to determine the institutions and principal investigators conducting NASA projects in a field. Entries are related to the citations (descriptions) by the accession number (item 3). The accession number has meaning only in this report; it is in no way permanently associated with nor does it uniquely identify a specific grant/contract/cooperative agreement anywhere except in the present report. Accession numbers are assigned sequentially to the citations, beginning with 1000. Thus, when an entry of interest is identified in the Appendix, the associated accession number allows ready location of the full description in the body of the report.





# NASA'S UNIVERSITY PROGRAM

## ALABAMA

**NAG 5-578** **Alabama A&M University** **1000**  
Determination of cosmic rays induced single event upsets in semiconductor devices  
*Period* *Obligations*  
08/01/85-07/31/86 FY85: \$152,003 TOTAL: \$152,003  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McGuire, S. C. GSFC/Stossinopoulos, E. G. 45-Elec Engr

**NAG 8-23** **Alabama A&M University** **1001**  
Research and training in intelligent robotic systems  
*Period* *Obligations*  
02/09/84-04/07/85 FY85: \$1,550 TOTAL: \$195,195  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Saha, H. MSFC/Randall, J. L. 46-Mech Engr  
Chen, I. MSFC/Foster, C.  
Borelli, M.

**NAG 8-24** **Alabama A&M University** **1002**  
Advanced interactive analytical integration and mission planning database for the space station  
*Period* *Obligations*  
02/09/84-02/08/85 FY85: TOTAL: \$97,995  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Saha, H. MSFC/Randall, J. L. 22-Computer Sci  
MSFC/Foster, C.

**NAG 8-27** **Alabama A&M University** **1003**  
High energy cosmic ray interactions in emulsion  
*Period* *Obligations*  
08/22/84-02/27/85 FY85: TOTAL: \$58,231  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McGuire, S. C. MSFC/Parnell, T. A. 13-Physics

**NAG 8-29** **Alabama A&M University** **1004**  
Surface roughness of flat and curved optical surfaces  
*Period* *Obligations*  
06/01/85-05/31/86 FY85: \$293,373 TOTAL: \$293,373  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Venkateswarly, P. MSFC/Randall, J. L. 46-Mech Engr

**NAG 8-36** **Alabama A&M University** **1005**  
Research on coded mask telescope  
*Period* *Obligations*  
09/18/85-09/17/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
George, M. C. MSFC/Darbro, W. 11-Astronomy  
MSFC/Walker, R. J.

**NAG 8-42** **Alabama A&M University** **1006**  
Data prediction statistical study  
*Period* *Obligations*  
09/26/85-09/25/86 FY85: \$78,035 TOTAL: \$78,035  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shipman, J. R. MSFC/Randall, J. L. 41-Aero Engr  
Temple, E. C. MSFC/Blount, D.

**NAG 8-45** **Alabama A&M University** **1007**  
Ellipsometric measurement of liquid  
*Period* *Obligations*  
09/26/85-09/25/86 FY85: \$41,496 TOTAL: \$41,496  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Chang, K. MSFC/Randall, J. L. 13-Physics  
MSFC/Walker, R. J.

**NAG13-2** **Alabama A&M University** **1008**  
Effects of soil moisture and pertinent soil diagnostic properties on thermal infrared and reflectance characteristics  
*Period* *Obligations*  
01/01/83-09/30/84 FY85: TOTAL: \$62,663  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Coleman, T. L. NSTL/Joyce, A. T. 55-Agricultural Sci

**NAG13-3** **Alabama A&M University** **1009**  
Development of remote sensing techniques capable of delineating soils as an aid to soil survey  
*Period* *Obligations*  
10/01/84-09/30/85 FY85: TOTAL: \$99,931  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Montgomery, O. L. NSTL/Joyce, A. T. 55-Agricultural Sci

**NAS 8-32945** **Alabama A&M University** **1010**  
Solution of growth of crystals in zero gravity experiment for materials processing in space  
*Period* *Obligations*  
03/05/78-12/31/85 FY85: \$256,860 TOTAL: \$1,122,760  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lal, R. B. MSFC/Moore, W. W., Jr. 19-Phys Sci, NEC  
MSFC/Fogle, V.

**NAS 8-36299** **Alabama A&M University** **1011**  
Nozzle material investigation  
*Period* *Obligations*  
03/04/85-03/03/86 FY85: \$51,652 TOTAL: \$51,652  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Thompson, J. H. MSFC/Austin, J. G., Jr. 12-Chemistry  
MSFC/Congo, R.

**NGT 01-001-801** **Alabama A&M University** **1012**  
NASA graduate student researchers program  
*Period* *Obligations*  
04/01/82-03/31/84 FY85: TOTAL: \$22,720  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
George, M. C. HQ-LB/Owens, F. C. 13Physics

**NSG 8037** **Alabama A&M University** **1013**  
Atmospheric effects on coherent laser systems  
*Period* *Obligations*  
06/01/76-12/31/85 FY85: TOTAL: \$254,226  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Murtz, S. S. MSFC/Bilbro, J. W. 45-Elec Engr  
MSFC/Kent, M. I.

**NASA'S UNIVERSITY PROGRAM**  
**ALABAMA (Continued)**

**NAG 8-491 Auburn University 1014**  
Control of solidification structure of germanium-silicon solutions  
*Period Obligations*  
09/16/84-09/15/85 FY85: \$80,000 TOTAL: \$80,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Jemian, W. A. MSFC/Black, R. E. 46-Mech Engr

**NAG 8-532 Auburn University 1015**  
Determination of damping characteristics of wire rope vibration oscillators  
*Period Obligations*  
06/24/85-06/23/86 FY85: \$99,960 TOTAL: \$99,960  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cochran, J. E. MSFC/Guest, S. H. 13-Physics  
Cutchins, M. A.

**NAGW 758 Auburn University 1016**  
Spatial and temporal variability of soil temperature, moisture and surface soil properties as they relate to science issues of global habitability  
*Period Obligations*  
08/01/85-07/31/86 FY85: \$50,000 TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hajek, B. F. HQ-EE/Tuyahov, A. J. 39-Env Sci, NEC

**NAS 8-33886 Auburn University 1017**  
Research study: Solid rocket motor internal ballistic performance variations  
*Period Obligations*  
09/03/80-06/15/84 FY85: TOTAL: \$174,861  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Foster, W. A., Jr. MSFC/Shackelford, B. 31-Atmos Sci  
Dforzini, R. H. MSFC/Aderbald, H.

**NAS 8-35057 Auburn University 1018**  
A theoretical investigation of solar plasma phenomena  
*Period Obligations*  
04/01/83-07/15/86 FY85: \$9,900 TOTAL: \$19,900  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hinata, S. MSFC/Moore, R. L. 31-Atmos Sci  
MSFC/Hildner, E.

**NAS 8-35914 Auburn University 1019**  
Surface analysis of space telescope material specimens  
*Period Obligations*  
03/30/84-09/29/84 FY85: TOTAL: \$9,700  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Fromhold, A. T., Jr. MSFC/Little, S. A. 19-Phys Sci, NEC  
MSFC/Whitaker, A. F.

**NAS 8-35977 Auburn University 1020**  
Computer architectural assessment and design analysis  
*Period Obligations*  
06/20/84-05/31/86 FY85: \$55,000 TOTAL: \$80,005  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Carroll, C. C. MSFC/Atherton, J. 22-Computer Science  
MSFC/Mattox, R.

**NAS 8-35992 Auburn University 1021**  
Nonlinear rotordynamics analysis  
*Period Obligations*  
03/20/84-05/31/85 FY85: TOTAL: \$36,904  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Day, W. B. MSFC/Cox, J. W. 31-Atmos Sci  
MSFC/Danger, R. L.

**NAS 8-36146 Auburn University 1022**  
Measurement of damping characteristics of graphite epoxy material  
*Period Obligations*  
08/06/84-09/30/85 FY85: TOTAL: \$99,103  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Crocker, M. J. MSFC/Guest, S. H. 46-Mech Engr  
MSFC/Reed, D. K.

**NAS 8-36147 Auburn University 1023**  
Improved internal ballistic analysis and design procedures for solid rocket motors  
*Period Obligations*  
10/05/84-03/13/86 FY85: \$105,438 TOTAL: \$105,438  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Sforzini, R. H. MSFC/Martin, C. L. 49-Engr, NEC  
Foster, W. A., Jr. MSFC/Funkhouser, J. O.

**NAS 8-36287 Auburn University 1024**  
Fracture analysis of radial scientific instrument module registration fittings of the space telescope  
*Period Obligations*  
01/15/85-12/31/85 FY85: \$41,548 TOTAL: \$41,548  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Springfield, C. W. MSFC/Faile, G. C. 44-Civil Engr  
MSFC/Hollis, R. E.

**NAS 8-36288 Auburn University 1025**  
Stress analysis of the space telescope focal plane structural joint  
*Period Obligations*  
09/13/84-12/30/85 FY85: \$69,088 TOTAL: \$69,088  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Foster, W. A., Jr. MSFC/Faile, G. C. 49-Engr, NEC  
Shoemaker, W. L. MSFC/Bianca, C. J.

**NAS 8-36470 Auburn University 1026**  
Satellite altitude motion models for capture and retrieval investigations  
*Period Obligations*  
03/28/85-03/28/86 FY85: \$46,512 TOTAL: \$46,512  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cochran, J. E. MSFC/Buchanan, H. 42-Astro Engr  
MSFC/Dabney, R.

**NAS 8-36471 Auburn University 1027**  
Surface analysis of Solar Maximum Mission and long duration exposure facility specimen  
*Period Obligations*  
03/26/85-09/25/86 FY85: \$73,997 TOTAL: \$73,997  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Fromhold, A. T. MSFC/Little, S. A. 13-Physics  
Williams, J. R. MSFC/Whitaker, A. F.  
Dancshvar, K.

**NASA'S UNIVERSITY PROGRAM**  
**ALABAMA (Continued)**

**NAS 8-36475 Auburn University 1028**  
 Nonlinear rotor dynamics analysis  
*Period Obligations*  
 05/31/85-02/30/86 FY85: \$50,000 TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Day, W. B. MSFC/Cox, J. W. 46-Mech Engr  
 MSFC/Spanger, K. L.

**NAS10-11027 Auburn University 1029**  
 Effective neutralization mechanisms for hydrologic fuel spills  
*Period Obligations*  
 09/11/84-09/11/85 FY85: TOTAL: \$69,577  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Tatarchuk, B. J. KSC/Gerron, R. A. 12-Chemistry

**NGT 01-003-801 Auburn University 1030**  
 Graduate student researchers program  
*Period Obligations*  
 06/16/85-06/15/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Tatarchuk, B. J. HQ-LE/Owens, F. C. 43-Chem Engr

**NGT 01-003-802 Auburn University 1031**  
 Graduate student researchers program  
*Period Obligations*  
 06/17/85-06/16/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Barnes, P. HQ-LE/Owens, F. C. 13-Physics

**NAG 1-447 Tuskegee Institute 1032**  
 Characterization of polymer adhesives for composites  
*Period Obligations*  
 02/01/84-03/31/86 FY85: \$103,456 TOTAL: \$203,049  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Dillon, I. G. LARC/Johnson, W. S. 47-Materials Engr  
 Jeelani, S. LARC/Everett, R. A., Jr.  
 Ludwick, A.

**NAG 3-76 Tuskegee Institute 1033**  
 Characterization of advanced electric propulsion systems  
*Period Obligations*  
 06/02/80-12/31/85 FY85: TOTAL: \$142,094  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Ray, P. K. LERC/Kerslake, W. R. 19-Phys Sci, NEC

**NAG 3-459 Tuskegee Institute 1034**  
 1983 graduate and undergraduate aerospace fellowship program  
*Period Obligations*  
 08/01/83-07/31/85 FY85: \$22,001 TOTAL: \$68,001  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Harris, V. G. LERC/Montegani, F. 46-Mech Engr  
 Jeelani, S.

**NAG 3-564 Tuskegee Institute 1035**  
 Investigation of rotor tip clearance flow phenomena in gas turbines  
*Period Obligations*  
 10/15/84-10/14/85 FY85: \$129,844 TOTAL: \$129,844  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jenkins, R. M. LERC/Povinelli, L. A. 41-Aero Engr  
 Kumar, G. N.  
 Harris, V. G.

**NAG 8-20 Tuskegee Institute 1036**  
 Research support for the school of engineering  
*Period Obligations*  
 07/20/83-12/14/85 FY85: \$208,313 TOTAL: \$582,763  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Harris, V. G. MSFC/Randall, J. L. 41-Aero Engr  
 Kumar, G. N. MSFC/Osburn, L.

**NAG 8-38 Tuskegee Institute 1037**  
 Characterization of fiber composites  
*Period Obligations*  
 09/19/85-09/18/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jeelani, S. MSFC/Penn, B. G. 47-Materials Engr  
 MSFC/Walker, R. J.

**NAG 8-40 Tuskegee Institute 1038**  
 Effects of interactions of protons, electrons and corona discharges on the electrical insulating materials used on solar cell arrays  
*Period Obligations*  
 09/19/85-09/18/86 FY85: \$83,227 TOTAL: \$83,227  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Dorewamy, C. V. MSFC/Randall, J. L. 45-Elec Engr  
 MSFC/Walker, R. W.

**NAG 8-41 Tuskegee Institute 1039**  
 Development of computation model for the energy and momentum transfer processes within laser supported plasma  
*Period Obligations*  
 09/30/85-07/29/86 FY85: \$28,446 TOTAL: \$28,446  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Harris, V. G. MSFC/Randall, J. L. 22-Computer Science  
 MSFC/Walker, R. J.

**NAG 8-44 Tuskegee Institute 1040**  
 Determination of residual stress distribution in machining quenched and tempered AlSi 4130 steel  
*Period Obligations*  
 09/23/85-09/22/86 FY85: \$20,000 TOTAL: \$20,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jeelani, S. MSFC/Randall, J. L. 47-Materials Engr  
 MSFC/Walker, R. J.

**NAG10-8 Tuskegee Institute 1041**  
 Permeability of polymeric materials to condensable gases and organic liquids  
*Period Obligations*  
 07/15/83-07/15/84 FY85: TOTAL: \$36,717  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Dillon, I. G. KSC/Bryan, C. J. 12-Chemistry

**NASA'S UNIVERSITY PROGRAM**  
**ALABAMA (Continued)**

**NAG10-19 Tuskegee Institute 1042**  
 Permeability of polymenz material to condensable gases and organic liquids  
*Period Obligations*  
 11/19/84-11/19/85 FY85: \$63,399 TOTAL: \$63,399  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Dillion, I. G. KSC/Bryan, C. J. 12-Chemistry

**NCC 2-12 Tuskegee Institute 1043**  
 Morphometrics of cellular damage in mice receiving whole body irradiation  
*Period Obligations*  
 08/01/79-10/31/85 FY85: \$15,000 TOTAL: \$310,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Sapp, W. J. ARC/Philpott, D. E. 54-Env Biology

**NCC 2-353 Tuskegee Institute 1044**  
 Use of computer aided design in aerodynamic research  
*Period Obligations*  
 06/01/85-08/31/85 FY85: \$5,000 TOTAL: \$5,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jenkins, R. M. ARC/Ziliac, G. G. 41-Aero Engr

**NCC 2-358 Tuskegee Institute 1045**  
 Modification of a computer code for calculation of wall interference effects in a tunnel with non-uniform flow resistance  
*Period Obligations*  
 06/01/85-08/31/85 FY85: \$5,000 TOTAL: \$5,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Harris, V. G. ARC/Steinle, F. W. 41-Aero Engr

**NGT 01-005-751 Tuskegee Institute 1046**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/84-05/31/86 FY85: \$18,000 TOTAL: \$33,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jeelani, S. HQ-LB/Owens, F. C. 46-Mech Engr

**NSG 3295 Tuskegee Institute 1047**  
 An improved computer model for prediction of axial gas turbine performance losses  
*Period Obligations*  
 08/01/79-08/31/84 FY85: TOTAL: \$170,677  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jenkins, R. M. LERC/Civinskis, K. C. 41-Aero Engr

**NAG 8-524 University of Alabama - Birmingham 1048**  
 Protein crystal growth  
*Period Obligations*  
 04/01/85-06/01/85 FY85: \$10,000 TOTAL: \$10,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bugg, C. E. 51-Biological Sci

**NAGW 749 University of Alabama - Birmingham 1049**  
 Cosmic ices and molecules in laboratory investigation  
*Period Obligations*  
 06/01/85-05/31/86 FY85: \$26,259 TOTAL: \$26,259  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wdowiak, T. J. HQ-EZ/Stencel, R. E. 13-Physics  
 HQ-EZ/Weiler, E. J.

**NAS 8-34962 University of Alabama - Birmingham 1050**  
 Effect of microstructure on weld haze cracking of Inconel 718  
*Period Obligations*  
 08/27/82-05/25/85 FY85: TOTAL: \$97,365  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Thompson, R. G. MSFC/Rowe, R. R. 47-Materials Engr  
 MSFC/Nunes, A. C.

**NAS 8-36611 University of Alabama - Birmingham 1051**  
 Protein crystal growth in a microgravity environment  
*Period Obligations*  
 07/25/85-07/24/88 FY85: \$204,624 TOTAL: \$204,624  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bugg, C. E. MSFC/Moore, W. W. 51-Biological Sci  
 Delucas, L. J.  
 Baird, J. K.

**NGR 01-010-001 University of Alabama - Birmingham 1052**  
 Model for origin and coevolution of genetic code and the process of protein synthesis  
*Period Obligations*  
 05/09/73-12/01/85 FY85: \$80,000 TOTAL: \$692,974  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lacey, J. C., Jr. HQ-EB/Devincenzi, D. L. 12-Chemistry  
 HQ-EB/Rambler, M. R.

**NGT 02-002-800 University of Alabama - Birmingham 1053**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/06/85-06/05/86 FY85: \$33,864 TOTAL: \$33,864  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 McNulty, M. HQ-LE/Owens, F. C. 22-Computer Science

**NGT 02-002-801 University of Alabama - Birmingham 1054**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/06/85-06/05/86 FY85: \$17,610 TOTAL: \$17,610  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 McNulty, M. HQ-LE/Owens, F. C. 12-Chemistry

**NGT 02-002-802 University of Alabama - Birmingham 1055**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/85-05/31/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Agesti, D. G. HQ-LE/Owens, F. C. 13-Physics

**NAG 3-620 University of Alabama - Huntsville 1056**  
 Beam plasma interactions  
*Period Obligations*  
 02/10/85-02/09/86 FY85: \$24,043 TOTAL: \$24,043  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Olsen, R. C. LERC/Kolecki, J. C. 13-Physics  
 LERC/Purvis, C. K.

**NASA'S UNIVERSITY PROGRAM**  
**ALABAMA (Continued)**

**NAG 5-475 University of Alabama - Huntsville 1057**  
Thermal ion heating in the vicinity of the plasmopause  

Period	Obligations	
10/01/84-03/31/86	FY85:	TOTAL: \$33,947
Prin. Invest.	NASA Tech. Officer	CASE Category
Comfort, R. H.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
Olsen, R. C.	GSFC/Hoffman, R. A.	

**NAG 5-500 University of Alabama - Huntsville 1058**  
Analysis interpretation and role of ultra-violet radiation solar flow  

Period	Obligations	
02/01/85-01/31/86	FY85: \$36,800	TOTAL: \$36,800
Prin. Invest.	NASA Tech. Officer	CASE Category
Emslie, A. G.	GSFC/Bullock, G. D.	13-Physics

**NAG 8-32 University of Alabama - Huntsville 1059**  
Study of the production of some superconducting and magnetic materials of solidification in the drop tower  

Period	Obligations	
06/01/85-05/31/86	FY85: \$66,690	TOTAL: \$66,690
Prin. Invest.	NASA Tech. Officer	CASE Category
Wu, M. K.	MSFC/Curreri, P. A.	13-Physics
	MSFC/Strauss, E. M.	

**NAG 8-35 University of Alabama - Huntsville 1060**  
Numerical studies of the surface tension effect on the interface of a rotating fluid  

Period	Obligations	
08/15/85-08/14/86	FY85: \$40,811	TOTAL: \$40,811
Prin. Invest.	NASA Tech. Officer	CASE Category
Hung, R. J.	MSFC/Leslie, F.	13-Physics
	MSFC/Smith, G. T.	

**NAG 8-46 University of Alabama - Huntsville 1061**  
Experimental determination of monoball heat transfer  

Period	Obligations	
09/27/85-03/26/86	FY85: \$9,993	TOTAL: \$9,993
Prin. Invest.	NASA Tech. Officer	CASE Category
Wessling, F. C.	MSFC/Till, W. A.	13-Physics
	MSFC/Wegrich, R.	

**NAG 8-488 University of Alabama - Huntsville 1062**  
Coordinated study of solar terrestrial payloads on space station  

Period	Obligations	
07/10/84-01/09/86	FY85:	TOTAL: \$49,995
Prin. Invest.	NASA Tech. Officer	CASE Category
Wu, S. T.	MSFC/Roberts, W. T.	39-Env Sci, NEC

**NAG 8-511 University of Alabama - Huntsville 1063**  
Verification of the critical point wetting theory using microgravity  

Period	Obligations	
01/18/85-01/17/87	FY85: \$99,997	TOTAL: \$99,997
Prin. Invest.	NASA Tech. Officer	CASE Category
Kaukler, W. F.	MSFC/Black, R. E.	21-Mathematics

**NAG 8-546 University of Alabama - Huntsville 1064**  
Study OMV docking information  

Period	Obligations	
07/29/85-12/28/85	FY85: \$14,909	TOTAL: \$14,909
Prin. Invest.	NASA Tech. Officer	CASE Category
Rogers, J. G.	MSFC/Quinn, A.	49-Engr, NEC
	MSFC/Washington, P.	

**NAG 8-553 University of Alabama - Huntsville 1065**  
Analysis of a directional solidification furnace  

Period	Obligations	
10/01/85-04/01/86	FY85: \$69,349	TOTAL: \$69,349
Prin. Invest.	NASA Tech. Officer	CASE Category
Wessling, F.	MSFC/Vann, W.	41-Aero Engr

**NAGW 9 University of Alabama - Huntsville 1066**  
Dynamical behavior of a flaring loop (a two dimensional, time-dependent MHD (magnetohydrodynamic) flux tube model  

Period	Obligations	
10/01/79-10/31/85	FY85: \$85,000	TOTAL: \$418,462
Prin. Invest.	NASA Tech. Officer	CASE Category
Wu, S. T.	HQ-EZ/Spicer, D. S.	13-Physics

**NAGW 294 University of Alabama - Huntsville 1067**  
Impulsive X-ray emission in solar flares  

Period	Obligations	
04/01/82-10/31/85	FY85: \$35,000	TOTAL: \$121,794
Prin. Invest.	NASA Tech. Officer	CASE Category
Emslie, A. G.	HQ-EZ/Spicer, D. S.	13-Physics

**NAGW 743 University of Alabama - Huntsville 1068**  
Study of traveling interplanetary phenomena (STRIP)  

Period	Obligations	
05/01/85-04/30/86	FY85: \$12,500	TOTAL: \$12,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Wu, S. T.	HQ-EE/Lynch, J. T.	13-Physics

**NAS 8-33526 University of Alabama - Huntsville 1069**  
Data analysis and modeling of ultraviolet spectrometer and polarimeter (UVSP) experiment and other related experiments for Solar Maximum Mission (SMM)  

Period	Obligations	
02/29/80-04/23/86	FY85: \$39,997	TOTAL: \$445,391
Prin. Invest.	NASA Tech. Officer	CASE Category
Wu, S. T.	MSFC/Tandberghanssen, E.	
	MSFC/Bass, B. G.	31-Atmos Sci

**NAS 8-33542 University of Alabama - Huntsville 1070**  
Advanced furnace development and scientific coordination activity  

Period	Obligations	
06/29/79-09/30/84	FY85:	TOTAL: \$86,155
Prin. Invest.	NASA Tech. Officer	CASE Category
Hendrieks, J. B.	MSFC/Bass, B. G.	47-Materials Engr
	MSFC/Horton, J. C.	

**NASA'S UNIVERSITY PROGRAM**  
**ALABAMA (Continued)**

**NAS 8-33726 University of Alabama - Huntsville 1071**  
Study effects of internal wave on the neutral atmosphere

<i>Period</i>	<i>Obligations</i>	
02/11/80-08/31/86	FY85: \$99,923	TOTAL: \$596,730
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hung, R. J.	MSFC/West, G. S.	32-Geological Sci
	MSFC/Smith, G. T.	

**NAS 8-33809 University of Alabama - Huntsville 1072**  
Research related to the relativity Explorer

<i>Period</i>	<i>Obligations</i>	
05/21/81-02/18/86	FY85: \$159,966	TOTAL: \$466,465
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hendricks, J. B.	MSFC/Decher, R.	31-Atmos Sci
Karr, G. R.	MSFC/Urban, E. W.	

**NAS 8-33811 University of Alabama - Huntsville 1073**  
Hydrogen embrittlement in Cu-Ni alloys

<i>Period</i>	<i>Obligations</i>	
05/27/81-06/15/84	FY85:	TOTAL: \$61,238
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Davis, J. H.	MSFC/McClure, J. C.	47-Materials Engr
	MSFC/Alter, W. A.	

**NAS 8-33982 University of Alabama - Huntsville 1074**  
Plasma and magnetospheric research

<i>Period</i>	<i>Obligations</i>	
08/27/80-12/31/85	FY85: \$503,997	TOTAL: \$1,254,999
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Comfort, R. H.	MSFC/Chappell, C. R.	13-Physics
Horwitz, J. L.	MSFC/Fields, S. F.	

**NAS 8-34137 University of Alabama - Huntsville 1075**  
Burst and transient source experiment (BATSE) for the gamma-ray observatory

<i>Period</i>	<i>Obligations</i>	
02/05/81-11/30/85	FY85: \$84,992	TOTAL: \$251,976
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Paciesas, W. S.	MSFC/Fishman, G. J.	31-Atmos Sci
	MSFC/Parnell, T. A.	

**NAS 8-34530 University of Alabama - Huntsville 1076**  
Materials processing in low gravity program

<i>Period</i>	<i>Obligations</i>	
06/19/81-09/30/85	FY85: \$258,488	TOTAL: \$845,595
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Workman, G. L.	MSFC/Black, R. E.	13-Physics
	MSFC/Mixon, W. R.	

**NAS 8-34953 University of Alabama - Huntsville 1077**  
Determine mission configuration for future payloads for Spacelab missions and space plasma physics experiments working group

<i>Period</i>	<i>Obligations</i>	
06/14/82-09/30/86	FY85:	TOTAL: \$113,466
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wu, S. T.	MSFC/Richards, L. O.	31-Atmos Sci

**NAS 8-34957 University of Alabama - Huntsville 1078**  
Mercury-cadmium-telluride crystal growth studies

<i>Period</i>	<i>Obligations</i>	
09/01/82-10/31/85	FY85: \$8,995	TOTAL: \$168,161
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Baird, J. K.	MSFC/Lehoczy, S. L.	13-Physics
	MSFC/Lee, J.	

**NAS 8-35052 University of Alabama - Huntsville 1079**  
Shuttle HPM combustion vorticity instability analysis

<i>Period</i>	<i>Obligations</i>	
01/10/83-12/09/86	FY85: \$140,000	TOTAL: \$200,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chung, T. J.	MSFC/Martin, C. L.	31-Atmos Sci
	MSFC/Aderhold, H.	

**NAS 8-35304 University of Alabama - Huntsville 1080**  
Advanced Solar Observatory (ASO) science study group

<i>Period</i>	<i>Obligations</i>	
12/30/82-05/30/85	FY85:	TOTAL: \$68,800
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wu, S. T.	MSFC/Roberts, W. T.	13-Physics
	MSFC/Nein, M. E.	

**NAS 8-35334 University of Alabama - Huntsville 1081**  
New instrumentation for phase partitioning

<i>Period</i>	<i>Obligations</i>	
06/29/83-05/31/86	FY85: \$35,000	TOTAL: \$129,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Harris, J. M.	MSFC/Fogle, V.	59-Life Sci, NEC

**NAS 8-35339 University of Alabama - Huntsville 1082**  
Study of plasma source for spacecraft potential

<i>Period</i>	<i>Obligations</i>	
06/29/83-09/30/85	FY85:	TOTAL: \$11,791
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Olsen, R. C.	MSFC/Chappel, C. R.	13-Physics
	MSFC/Fields, S. A.	

**NAS 8-35354 University of Alabama - Huntsville 1083**  
Research study: Space radiation studies

<i>Period</i>	<i>Obligations</i>	
07/22/83-12/31/85	FY85: \$9,800	TOTAL: \$115,793
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gregory, J. C.	MSFC/Parnell, T. A.	13-Physics
	MSFC/Watts, J. W.	

**NAS 8-35362 University of Alabama - Huntsville 1084**  
Cell partition in two polymer aqueous phases

<i>Period</i>	<i>Obligations</i>	
07/21/83-06/21/86	FY85: \$34,089	TOTAL: \$130,089
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Harris, J. M.	MSFC/Yost, V. H.	59-Life Sci, NEC

**NAS 8-35663 University of Alabama - Huntsville 1085**  
Atmospheric drag density studies

<i>Period</i>	<i>Obligations</i>	
09/22/83-01/31/85	FY85:	TOTAL: \$25,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Karr, G. P.	MSFC/Smith, O. E.	31-Atmos Sci
	MSFC/Smith, R. E.	

**NASA'S UNIVERSITY PROGRAM**  
**ALABAMA (Continued)**

**NAS 8-35665 University of Alabama - Huntsville 1086**  
 Drop tube technical tasks  

<i>Period</i>	<i>Obligations</i>
10/13/83-10/01/85	FY85: TOTAL: \$92,999
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Workman, G. L.	MSFC/Ethridge, E. C. 19-Phys Sci, NEC
	MSFC/Curren, P. A.

**NAS 8-35667 University of Alabama - Huntsville 1087**  
 Cosmic ray astronomy and energetic particle interactions study  

<i>Period</i>	<i>Obligations</i>
01/17/84-11/30/85	FY85: \$13,962 TOTAL: \$59,962
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Gregory, J. C.	MSFC/Parnell, T. A. 11-Astronomy
	MSFC/Meegan, C. A.

**NAS 8-35670 University of Alabama - Huntsville 1088**  
 Teleoperator and robotic system analysis  

<i>Period</i>	<i>Obligations</i>
02/03/84-05/31/85	FY85: \$19,999 TOTAL: \$89,929
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Tech, W.	MSFC/Bryan, T. C. 22-Computer Science
	MSFC/Scott, D. D.

**NAS 8-35978 University of Alabama - Huntsville 1089**  
 Study of fiber glass pulling  

<i>Period</i>	<i>Obligations</i>
06/25/84-12/25/85	FY85: TOTAL: \$45,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Workman, G.	MSFC/Ethridge, E. C. 47-Materials Engr
	MSFC/Nrumann, R. J.

**NAS 8-35986 University of Alabama - Huntsville 1090**  
 'Ostwald Ripening Theory'  

<i>Period</i>	<i>Obligations</i>
10/03/84-12/02/85	FY85: \$68,255 TOTAL: \$68,255
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Baird, J. K.	MSFC/Frazier, D. O. 19-Phys Sci, NEC
	MSFC/Strauss, E. M.

**NAS 8-36102 University of Alabama - Huntsville 1091**  
 Support gaseous study group  

<i>Period</i>	<i>Obligations</i>
07/09/84-04/30/86	FY85: \$86,487 TOTAL: \$108,484
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Wu, S. T.	MSFC/Roberts, W. T. 31-Atmos Sci

**NAS 8-36189 University of Alabama - Huntsville 1092**  
 Mechanisms of inter-action of atomic oxygen on surfaces  

<i>Period</i>	<i>Obligations</i>
01/17/85-01/16/86	FY85: \$15,997 TOTAL: \$15,997
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Gregory, J. C.	MSFC/Whitaker, A. F. 19-Phys Sci, NEC
	MSFC/Linton, R. C.

**NAS 8-36191 University of Alabama - Huntsville 1093**  
 Cosmic ray detector  

<i>Period</i>	<i>Obligations</i>
11/29/84-03/28/86	FY85: \$44,997 TOTAL: \$44,997
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Gregory, J. C.	MSFC/Parnell, T. A. 11-Astronomy
	MSFC/Watts, J. W.

**NAS 8-36254 University of Alabama - Huntsville 1094**  
 Advanced high pressure O2/H2 technology information dissemination and research  

<i>Period</i>	<i>Obligations</i>
09/27/85-09/26/88	FY85: \$24,816 TOTAL: \$24,816
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Wu, S. T.	MSFC/Houston, V. L. 41-Aero Engr
	MSFC/Richmond, R.

**NAS 8-36485 University of Alabama - Huntsville 1095**  
 Heat treatment study of MAR-M246  

<i>Period</i>	<i>Obligations</i>
09/17/85-09/17/86	FY85: \$29,999 TOTAL: \$29,999
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Workman, G. L.	MSFC/Parr, R. A. 13-Physics
	MSFC/Alter, W. S.

**NAS 8-36645 University of Alabama - Huntsville 1096**  
 Partial analysis of LDEF experiment a 0114 study  

<i>Period</i>	<i>Obligations</i>
05/20/85-11/19/86	FY85: \$9,900 TOTAL: \$9,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Gregory, J. C.	MSFC/Peters, P. N. 12-Chemistry
	MSFC/Muler, E. R.

**NGT 01-002-803 University of Alabama - Huntsville 1097**  
 NASA graduate student researchers program  

<i>Period</i>	<i>Obligations</i>
06/01/82-05/31/84	FY85: TOTAL: \$22,800
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Young, R. B.	HQ-LB/Owens, F. C. 51-Biological Sci

**NGT 01-002-804 University of Alabama - Huntsville 1098**  
 NASA graduate student researchers program  

<i>Period</i>	<i>Obligations</i>
06/01/83-12/31/84	FY85: TOTAL: \$22,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Horwitz, J. L.	HQ-LB/Owens, F. C. 22-Computer Science

**NGT 01-008-021 University of Alabama - Huntsville 1099**  
 Summer faculty fellowship program  

<i>Period</i>	<i>Obligations</i>
01/01/76-03/31/86	FY85: \$371,697 TOTAL: \$1,241,680
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Karr, G. R.	HQ-LB/Owens, F. C. 49-Engr, NEC

**NGT 01-008-800 University of Alabama - Huntsville 1100**  
 NASA graduate student researchers program  

<i>Period</i>	<i>Obligations</i>
06/01/81-08/31/84	FY85: TOTAL: \$30,350
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Horowitz, J. L.	HQ-LB/Owens, F. C. 13-Physics

# **NASA'S UNIVERSITY PROGRAM** **ALABAMA (Continued)**

## **NGT 01-008-802 University of Alabama - Huntsville 1101** NASA graduate student researchers program

Period	Obligations	
09/01/81-05/31/84	FY85:	TOTAL: \$23,630
Prin. Invest.	NASA Tech. Officer	CASE Category
Coleman, W. R.	HQ-LB/Owens, F. C.	13-Physics

## **NGT 01-008-803 University of Alabama - Huntsville 1102** NASA graduate student researchers program

Period	Obligations	
07/01/85-06/30/86	FY85: \$15,000	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Wu, S. T.	HQ-LE/Owens, F. C.	46-Mech Engr

## **NAG 8-34 University of Alabama - University 1103** Enginevalue assignment strategies in rotor systems

Period	Obligations	
07/01/85-06/30/86	FY85: \$49,970	TOTAL: \$49,970
Prin. Invest.	NASA Tech. Officer	CASE Category
Youngblood, J. N.	MSFC/Fox, T. H.	46-Mech Engr
	MSFC/Schutzenhofer, L. A.	

## **NAG 8-469 University of Alabama - University 1104** Graphite formation in cast iron

Period	Obligations	
03/30/84-06/30/86	FY85: \$44,095	TOTAL: \$85,140
Prin. Invest.	NASA Tech. Officer	CASE Category
Stefanesou, D. M.	MSFC/Mixon, W. R.	47-Materials Engr

## **NAS 8-33507 University of Alabama - University 1105** Space Shuttle induced environment contamination monitor (IECM) air sampler experiment

Period	Obligations	
05/21/79-08/31/85	FY85:	TOTAL: \$39,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bertsch, W.	MSFC/Peters, P. N.	31-Atmos Sci
Zatko, D. A.	MSFC/Hester, H. B.	

## **NAS 8-34724 University of Alabama - University 1106** Graphite formation in cast iron

Period	Obligations	
02/08/82-11/15/83	FY85:	TOTAL: \$31,763
Prin. Invest.	NASA Tech. Officer	CASE Category
Stefanescu, D. M.	MSFC/Reeves, F. A.	47-Materials Engr
	MSFC/Williams, J. R.	

## **NAS 8-36193 University of Alabama - University 1107** The role of gravity during the solidification of miscibility gap alloys

Period	Obligations	
11/08/84-06/15/86	FY85: \$68,250	TOTAL: \$68,250
Prin. Invest.	NASA Tech. Officer	CASE Category
Stefanescu, D. M.	MSFC/Curreri, P. A.	99-Multi-Discip
Clum, J. A.	MSFC/Johnson, M. H.	

## **NGT 01-002-099 University of Alabama - University 1108** Summer faculty fellowship program

Period	Obligations	
01/01/78-12/31/85	FY85:	TOTAL: \$966,155
Prin. Invest.	NASA Tech. Officer	CASE Category
Freeman, L. M.	HQ-LB/Owens, F. C.	49-Engr, NEC

## **ALASKA**

## **NAG 5-452 University of Alaska - Fairbanks 1109** Comparison of satellite energetic ion mass spectrometer and incoherent-scatter radar data

Period	Obligations	
07/15/84-01/19/86	FY85:	TOTAL: \$33,523
Prin. Invest.	NASA Tech. Officer	CASE Category
Watkins, B. J.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

## **NAG 5-469 University of Alaska - Fairbanks 1110** Study of the westward traveling surge during substorms

Period	Obligations	
10/01/84-09/30/85	FY85:	TOTAL: \$34,994
Prin. Invest.	NASA Tech. Officer	CASE Category
Kan, J. R.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

## **NAG 5-470 University of Alaska - Fairbanks 1111** Modeling of the three-dimensional substorm current system

Period	Obligations	
10/01/84-09/30/85	FY85:	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Akasofu, S.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

## **NAG 5-471 University of Alaska - Fairbanks 1112** Auroral and dayglow modeling using Dynamics Explorer observations

Period	Obligations	
10/01/84-09/31/86	FY85:	TOTAL: \$34,970
Prin. Invest.	NASA Tech. Officer	CASE Category
Rees, M. H.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

## **NAG 5-493 University of Alaska - Fairbanks 1113** Optical observations of artificial comet and magnetotail barium releases

Period	Obligations	
01/01/85-12/31/85	FY85: \$74,841	TOTAL: \$74,841
Prin. Invest.	NASA Tech. Officer	CASE Category
Hallinan, T. J.	GSFC/Acuna, M. H.	13-Physics

## **NAG 5-571 University of Alaska - Fairbanks 1114** A study of disturbed solar wind and magnetotail based on ISEE 3 data

Period	Obligations	
07/01/85-06/30/86	FY85: \$40,000	TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Akasofu, S.	GSFC/Wales, R. O.	11-Astronomy

## **NAG 6-1 University of Alaska - Fairbanks 1115** Fluorescent plasma tracer and perturbation experiments from sounding rockets

Period	Obligations	
01/01/80-01/31/86	FY85: \$219,352	TOTAL: \$1,014,939
Prin. Invest.	NASA Tech. Officer	CASE Category
Wescott, E. M.	GSFC/Early, L. J.	19-Phys Sci, NEC
	GSFC/Pless, R. H.	



## NASA'S UNIVERSITY PROGRAM ALASKA (Continued)

**NAGW 269 University of Alaska - Fairbanks 1116**  
Numerical simulation of the turbulent cascade and voltage amplification mechanism in the magnetosphere

Period	Obligations	
01/01/82-09/30/85	FY85: \$29,082	TOTAL: \$89,907
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Swift, D. W.	HQ-EE/Lynch, J. T.	19-Phys Sci, NEC
	HQ-EE/Shawhan, S. D.	

**NAGW 635 University of Alaska - Fairbanks 1117**  
Auroral imaging from Space Lab III

Period	Obligations	
06/01/84-05/31/85	FY85: \$23,304	TOTAL: \$23,304
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hallinam, T. J.	HQ-EE/Lynch, J. T.	13-Physics
Lind, D.	HQ-EE/Shawhan, S. D.	

**NAS 5-26868 University of Alaska - Fairbanks 1118**  
Modeling of the atmosphere-magnetosphere-ionosphere system (MAMI)

Period	Obligations	
04/26/82-09/30/86	FY85: \$13,313	TOTAL: \$93,980
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rees, M. H.	GSFC/O'Brien, J. J.	13-Physics

**NAS 5-27428 University of Alaska - Fairbanks 1119**  
Operations of Poker Flat research range

Period	Obligations	
12/01/82-10/31/85	FY85: \$1,072,112	TOTAL: \$3,180,351
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brown, N. B.	GSFC/Milliner, C. F.	31-Atmos Sci
	GSFC/Duffy, R. T.	

**NAS 5-28762 University of Alaska - Fairbanks 1120**  
Coastal and Alaskan gyre circulation as determined by thematic mapper data

Period	Obligations	
08/06/85-12/05/88	FY85: \$203,049	TOTAL: \$203,049
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Royer, T. C.	GSFC/Oseroff, H.	33-Oceanography
	GSFC/Stuart, L.	

**NAS 5-28769 University of Alaska - Fairbanks 1121**  
Investigation of LANDSAT data on influence of the Yukon River on the Bering Sea

Period	Obligations	
08/06/85-12/05/87	FY85: \$149,663	TOTAL: \$149,663
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McRoy, C.	GSFC/Oseroff, H.	19-Phys Sci, NEC

**NAS 8-36321 University of Alaska - Fairbanks 1122**  
Obs (Ca, Ba, Sr) plasma experiments from CRRES

Period	Obligations	
04/12/85-12/31/85	FY85: \$15,000	TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wescott, E. M.	MSFC/Reasoner, D. L.	31-Atmos Sci

**NCA 2-20201 University of Alaska - Fairbanks 1123**  
Evaluation of LANDSAT MSS spectral data for reconnaissance wetlands mapping in interior Alaska

Period	Obligations	
06/01/82-08/31/83	FY85: \$18,468	TOTAL: \$18,468
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
George, T. H.	ARC/Wilson, D. E.	32-Geological Sci

**NCA 2-20401 University of Alaska - Fairbanks 1124**  
'Multisensor analysis of arctic and subarctic biomes in Alaska' (joint research interchange)

Period	Obligations	
05/01/84-03/31/86	FY85: \$31,995	TOTAL: \$60,995
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dean, K. G.	ARC/Norman, S. D.	32-Geological Sci
Osterkamp, T. E.	ARC/Lawless, J.	

**NSG 7447 University of Alaska - Fairbanks 1125**  
Study of the relationship between the ring current and magnetospheric substorms: Study of possible relationship of sudden stratospheric warmings with magnetospheric substorms

Period	Obligations	
06/01/78-05/31/85	FY85: \$323,391	TOTAL: \$323,391
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Akasofu, S. I.	HQ-EE/Lynch, J. T.	19-Phys Sci, NEC
	HQ-EE/Shawhan, S. D.	

## ARIZONA

**NAG 1-426 Arizona State University 1126**  
Thermal fatigue of carbon fiber aluminum composites

Period	Obligations	
11/01/83-12/31/84	FY85: \$47,373	TOTAL: \$47,373
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cowley, J. M.	LARC/Brewer, W. D.	47-Materials Engr
Carpenter, R. W.	LARC/Lisagor, W. B.	

**NAG 1-540 Arizona State University 1127**  
Precipitation in aluminum silicon carbide composites

Period	Obligations	
12/01/84-05/31/86	FY85: \$63,580	TOTAL: \$63,580
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nutt, S. R.	LARC/Brewer, W. D.	47-Materials Engr
	LARC/Lisagor, W. B.	

**NAG 1-562 Arizona State University 1128**  
Electromagnetic backscattering by corner reflectors

Period	Obligations	
02/01/85-01/31/86	FY85: \$49,645	TOTAL: \$49,645
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Balanis, C. A.	LARC/Gilreath, M. C.	45-Elec Engr

**NAG 1-598 Arizona State University 1129**  
Boundary-layer stability in laminar flow control

Period	Obligations	
06/15/85-01/14/86	FY85: \$28,583	TOTAL: \$28,583
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Saric, W. S.	LARC/Maddalon, D. V.	41-Aero Engr
	LARC/Hefner, J. N.	

**NASA'S UNIVERSITY PROGRAM**  
**ARIZONA (Continued)**

**NAG 2-217**                      **Arizona State University**                      **1130**  
 An evaluation of current speech technology for use in helicopter

<i>Period</i>	<i>Obligations</i>	
01/01/83-12/31/83	FY85: TOTAL: \$30,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Damos, D. L.	ARC/Voorhees, J. W.	69-Psych, NEC

**NAG 3-568**                      **Arizona State University**                      **1137**  
 Energy stability of thermocapillary convection in models of the float-zone process

<i>Period</i>	<i>Obligations</i>	
08/05/84-11/30/85	FY85: \$26,318 TOTAL: \$118,763	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Neitzel, G. P.	LERC/Carney, M. J.	49-Engr, NEC
Jankowski, D. F.		

**NAG 3-6**                      **Arizona State University**                      **1131**  
 Transient response of rotor bearing systems using component mode synthesis

<i>Period</i>	<i>Obligations</i>	
01/01/80-12/31/85	FY85: TOTAL: \$197,015	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nelson, H. D.	LERC/Fleming, D. P.	46-Mech Engr
Rajan, M.	LERC/Kascak, A. F.	

**NAG 3-580**                      **Arizona State University**                      **1138**  
 Optimal design of multi-shaft rotor systems

<i>Period</i>	<i>Obligations</i>	
12/31/84-12/30/85	FY85: \$44,683 TOTAL: \$44,683	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nelson, H. D.	LERC/Fleming, D. P.	46-Mech Engr
	LERC/Kascak, A. F.	

**NAG 3-112**                      **Arizona State University**                      **1132**  
 Parallel-processor simulation systems

<i>Period</i>	<i>Obligations</i>	
10/15/80-08/15/85	FY85: TOTAL: \$299,493	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
O'grady, E. P.	LERC/Krosel, S. M.	22-Computer Science
	LERC/Szuch, J. R.	

**NAG 3-623**                      **Arizona State University**                      **1139**  
 Modelling and measurement of heat transfer on turbine blade tip

<i>Period</i>	<i>Obligations</i>	
02/28/85-02/27/86	FY85: \$67,231 TOTAL: \$67,231	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Metzger, D. E.	LERC/Simon, F. F.	46-Mech Engr
Chyu, M.		

**NAG 3-167**                      **Arizona State University**                      **1133**  
 An improved turbulence modeling for gas turbine combustors

<i>Period</i>	<i>Obligations</i>	
06/01/81-05/29/86	FY85: TOTAL: \$50,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mongia, H. C.	LERC/Holdeman, J. D.	46-Mech Engr
So, R. M.		

**NAG 3-650**                      **Arizona State University**                      **1140**  
 Fabrication and characterization of high efficiency solar cells for space application

<i>Period</i>	<i>Obligations</i>	
08/05/85-08/04/86	FY85: \$75,000 TOTAL: \$75,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shen, C. C.	LERC/Wenberg, I.	45-Elec Engr
	LERC/Flood, D.	

**NAG 3-252**                      **Arizona State University**                      **1134**  
 Evaluation of optical emission spectroscopy for sputtering rates in ion thruster propulsion systems

<i>Period</i>	<i>Obligations</i>	
01/15/82-05/15/84	FY85: TOTAL: \$80,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Parsons, M. L.	LERC/Mantenieks, M. A.	13-Physics
Rock, B.		

**NAG 5-358**                      **Arizona State University**                      **1141**  
 The ultraviolet light curve of selected binary stars

<i>Period</i>	<i>Obligations</i>	
08/15/83-01/31/87	FY85: \$27,384 TOTAL: \$44,374	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cowley, A.	GSFC/Kondo, Y.	11-Astronomy
Crampton, D.		
McClure, R. D.		

**NAG 3-260**                      **Arizona State University**                      **1135**  
 Inhomogeneous swirling recirculating jets

<i>Period</i>	<i>Obligations</i>	
02/21/82-05/31/85	FY85: TOTAL: \$185,529	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
So, R. M.	LERC/Holdeman, J. D.	41-Aero Engr
Mongia, H. C.		

**NAG 5-400**                      **Arizona State University**                      **1142**  
 Development of high accuracy and resolution global and local geoid and gravity maps using satellite to satellite tracking data suitable for geophysics and oceanography

<i>Period</i>	<i>Obligations</i>	
04/15/84-04/14/85	FY85: TOTAL: \$45,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yuen, D. A.	GSFC/Welker, J. E.	32-Geological Sci

**NAG 3-383**                      **Arizona State University**                      **1136**  
 NASA-Arizona State University internship program

<i>Period</i>	<i>Obligations</i>	
01/03/83-11/01/85	FY85: \$30,000 TOTAL: \$74,011	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wang, E. Y.	LERC/Arrison, A.	45-Elec Engr
	LERC/Flood, D. J.	

**NAG 5-481**                      **Arizona State University**                      **1143**  
 Ultraviolet observations of galactic novae in outburst

<i>Period</i>	<i>Obligations</i>	
10/01/84-09/30/86	FY85: \$18,300 TOTAL: \$18,300	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Starrfield, S.	GSFC/Kondo, Y.	11-Astronomy
Kenyon, S.		
Ney, E.		

**NASA'S UNIVERSITY PROGRAM**  
**ARIZONA (Continued)**

**NAG 5-547 Arizona State University 1144**  
 K giant spectra for stella population models  
*Period Obligations*  
 06/01/85-05/31/86 FY85: \$4,604 TOTAL: \$4,604  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Burstein, D. GSFC/Kondo, Y. 11-Astronomy  
 Wu, C. C.  
 O'connell, R. W.

**NAG 8-487 Arizona State University 1145**  
 Comet Halley investigations using the Astro-I payload on Space Shuttle  
*Period Obligations*  
 07/01/84-09/30/85 FY85: TOTAL: \$42,987  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wyckoff, S. MSFC/Owens, J. H. 11-Astronomy

**NAG 8-505 Arizona State University 1146**  
 The X-ray properties of UGC galaxies in Einstein fields  
*Period Obligations*  
 12/21/84-12/20/85 FY85: \$12,994 TOTAL: \$12,994  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Burstein, D. MSFC/Johnson, W. G. 11-Astronomy

**NAG 9-59 Arizona State University 1147**  
 Mineralogy of carbonaceous chondrites and cosmic dust particles  
*Period Obligations*  
 02/15/83-02/14/86 FY85: \$89,500 TOTAL: \$245,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Buseck, P. R. JSC/Browne, I. D. 32-Geological Sci

**NAG 9-79 Arizona State University 1148**  
 Meteorites the origin and early evolution of the solar  
*Period Obligations*  
 03/01/84-02/28/86 FY85: \$77,500 TOTAL: \$152,653  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Larimer, J. W. JSC/Browne, I. D. 32-Geological Sci

**NAGW 1 Arizona State University 1149**  
 Planetary and Mars geomorphology  
*Period Obligations*  
 02/01/80-09/30/86 FY85: \$88,000 TOTAL: \$464,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Malin, M. C. HQ-EL/Scott, D. H. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 56 Arizona State University 1150**  
 Impact cratering experiments  
*Period Obligations*  
 04/01/80-09/30/84 FY85: TOTAL: \$111,079  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Greeley, R. HQ-EL/Quaide, W. L. 32-Geological Sci  
 HQ-EL/French, B. M.

**NAGW 132 Arizona State University 1151**  
 Geological studies of the Galilean satellite  
*Period Obligations*  
 02/01/81-01/31/86 FY85: \$75,000 TOTAL: \$443,725  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Greeley, R. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 182 Arizona State University 1152**  
 Phase equilibria in the Martian mantle  
*Period Obligations*  
 04/01/81-03/31/86 FY85: \$45,819 TOTAL: \$238,869  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Holloway, J. R. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 245 Arizona State University 1153**  
 Hydrovolcanic explosions: Water melt interactions and resultant dispersal patterns  
*Period Obligations*  
 10/15/81-10/14/85 FY85: TOTAL: \$51,021  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Sheridan, M. F. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 263 Arizona State University 1154**  
 The determination of Martian surface properties and processes from Viking IRTM observations  
*Period Obligations*  
 12/15/81-03/31/85 FY85: TOTAL: \$201,988  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Greeley, R. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/French, B. M.

**NAGW 519 Arizona State University 1155**  
 Participation in the International Venera Gallei (VEGA) mission to comet Halley  
*Period Obligations*  
 02/01/84-09/30/85 FY85: \$39,368 TOTAL: \$77,658  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Smith, B. A. HQ-EL/Brinton, H. C. 31-Atmos Sci  
 HQ-EL/Brunk, W. E.

**NAGW 524 Arizona State University 1156**  
 A study for future low-cost missions with combine on-board closed-loop optical navigation with the imaging science system  
*Period Obligations*  
 02/01/84-07/31/85 FY85: TOTAL: \$19,268  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Malin, M. C. HQ-EL/Quaide, W. L. 32-Geological Sci  
 HQ-EL/Boyce, J. M.

**NAGW 529 Arizona State University 1157**  
 Field measurements of the 1983 east rift basalt flows at Kilauea volcano  
*Period Obligations*  
 03/01/84-02/28/86 FY85: \$13,682 TOTAL: \$26,160  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Fink, J. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NASA'S UNIVERSITY PROGRAM**  
**ARIZONA (Continued)**

**NAGW 547 Arizona State University 1158**  
 Spectroscopy of comets  
*Period Obligations*  
 02/15/84-02/14/86 FY85: \$79,689 TOTAL: \$149,283  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wyckoff, S. HQ-EL/Brinton, H. C. 11-Astronomy  
 HQ-EL/Bergstrahl, J. T.

**NAGW 580 Arizona State University 1159**  
 Martian water ice clouds and surface condensates  
*Period Obligations*  
 03/15/84-03/14/86 FY85: \$35,000 TOTAL: \$69,722  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Greeley, R. HQ-EL/Brinton, H. C. 32-Geological Sci  
 HQ-EL/Brunk, W. E.

**NASW 4021 Arizona State University 1160**  
 Mid-infrared spectral emission radiometer for planetary exploration  
*Period Obligations*  
 11/01/84-10/31/86 FY85: \$150,000 TOTAL: \$150,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Christensen, P. R. HQ-EL/Vescelus, F. 11-Astronomy  
 Chase, S. C. HQ-EL/Quaide, W. L.  
 Kiefler, H. H.

**NASW 4075 Arizona State University 1161**  
 Mass observer camera prototype  
*Period Obligations*  
 05/15/85-05/14/86 FY85: \$50,000 TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Malin, M. C. HQ-EL/Quaide, W. L. 32-Geological Sci  
 HQ-EL/Vescelus, F.

**NCA 2-8 Arizona State University 1162**  
 Assessment of inherent parallelism in explicit CFD codes  
*Period Obligations*  
 01/15/85-01/15/86 FY85: \$34,973 TOTAL: \$34,973  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Tylavsky, D. J. ARC/Stevens, K. G. 22-Computer Science

**NCA 2-29 Arizona State University 1163**  
 Dynamic display of data on closed surfaces  
*Period Obligations*  
 05/01/85-12/31/85 FY85: \$32,630 TOTAL: \$32,630  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Nielson, G. M. ARC/Stead, S. E. 22-Computer Science  
 Foley, T. A.

**NCA 2-35401 Arizona State University 1164**  
 Natural abundance 13c measurements of non-volatile acids: New approaches  
*Period Obligations*  
 10/01/83-09/30/85 FY85: \$23,600 TOTAL: \$63,145  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Yuen, G. ARC/Des Marais, D. J. 12-Chemistry

**NCC 1-89 Arizona State University 1165**  
 Flat-plate experiments in the national transonic facility  
*Period Obligations*  
 10/22/84-01/21/86 FY85: \$52,162 TOTAL: \$52,162  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Saric, W. S. LARC/Peterson, J. B., Jr. 41-Aero Engr  
 LARC/Barnwell, R. W.

**NCC 2-202 Arizona State University 1166**  
 Examining the relation between subjective estimates of workload and individual difference in performances  
*Period Obligations*  
 08/15/82-09/30/84 FY85: TOTAL: \$113,387  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Damos, D. L. ARC/Hart, S. G. 69-Psych, NEC

**NCC 2-263 Arizona State University 1167**  
 Multiple-task performance to improve helicopter control  
*Period Obligations*  
 08/01/83-07/31/86 FY85: \$40,371 TOTAL: \$64,507  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Homa, D. ARC/Hartzell, E. J. 69-Psych, NEC

**NCC 2-346 Arizona State University 1168**  
 Laboratory simulations of Martian and Venusian Aeolian processes  
*Period Obligations*  
 03/01/85-02/28/86 FY85: \$81,713 TOTAL: \$81,713  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Greeley, R. ARC/Smith, B. F. 32-Geological Sci  
 Marshall, J.

**NCC 2-348 Arizona State University 1169**  
 Space station astrometric telescope facility: Definition and development phase  
*Period Obligations*  
 03/01/85-11/30/85 FY85: \$159,189 TOTAL: \$159,189  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Levey, E. H. ARC/Nishioka, K. 11-Astronomy  
 Gatewood, G. D. ARC/Swenson, B. L.

**NCC 9-14 Arizona State University 1170**  
 Planetary science laboratory for space station  
*Period Obligations*  
 02/11/85-12/31/85 FY85: \$27,473 TOTAL: \$27,473  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Greeley, R. JSC/Williams, R. J. 11-Astronomy

**NGT 03-001-801 Arizona State University 1171**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/82-05/31/85 FY85: TOTAL: \$39,780  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Moore, C. B. HQ-LB/Owens, F. C. 13-Physics

**NGT 03-001-802 Arizona State University 1172**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/85-05/31/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Greeley, R. HQ-LE/Owens, F. C. 32-Geological Sci

### NASA'S UNIVERSITY PROGRAM ARIZONA (Continued)

<b>NGT 03-001-803</b>	<b>Arizona State University</b>	<b>1173</b>
<b>NASA graduate student researchers program</b>		
<i>Period</i>	<i>Obligations</i>	
<b>07/01/85-06/30/86</b>	<b>FY85: \$18,000</b>	<b>TOTAL: \$18,000</b>
<i>Prn. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
<b>Greeley, R.</b>	<b>HQ-LE/Owens, F. C.</b>	<b>12-Chemistry</b>

<b>NAG 2-52</b>	<b>University of Arizona</b>	<b>1180</b>
The radial velocity search for extrasolar planets		
<i>Period</i>	<i>Obligations</i>	
10/01/80-11/30/85	FY85: \$84,095	TOTAL: \$385,460
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McMillan, R. S.	ARC/Black, D. C.	11-Astronomy
	ARC/Rathien, S. M.	

NSG 2284		Arizona State University	1174
Aeolian geology studies			
Period		Obligations	
12/01/77-02/28/86	FY85: \$11,770	TOTAL: \$290,560	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Greeley, R.	ARC/Pollack, J.	32-Geological Sci	
	ARC/Summers, A. L.		

<b>NAG 2-143</b>	<b>University of Arizona</b>	<b>1181</b>
<b>Participation in the Pioneer Venus mission</b>		
<i>Period</i>	<i>Obligations</i>	
10/01/81-10/31/85	FY85: \$54,255	TOTAL: \$202,134
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hunten, D. M.	ARC/Fimmel, R. O.	19-Phys Sci, NEC
	ARC/Craig, R. A.	

<b>NSG 3075</b>	<b>Arizona State University</b>	<b>1175</b>
Study of multiple jet array impingement heat transfer characteristics		
<i>Period</i>	<i>Obligations</i>	
09/01/75-02/28/86	FY85:	TOTAL: \$543,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Florschuetz, L. W.	LERC/Hippensteele, S. A.	41-Aero Engr
Metzger, D. E.	LERC/Gauntner, J. W.	

<b>NAG 2-161</b>	<b>University of Arizona</b>	<b>1182</b>
New techniques of fabricating lightweight glass mirrors		
<i>Period</i>	<i>Obligations</i>	
01/01/82-09/30/85	FY85: \$26,950	TOTAL: \$222,964
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Angel, J. R.	ARC/Melugin, R.	11-Astronomy
Woolf, N. J.		

<b>NSG 7255</b>	<b>Arizona State University</b>	<b>1176</b>
<b>The nature and origin of organic compounds in carbonaceous meteorites</b>		
<i>Period</i>	<i>Obligations</i>	
06/14/76-01/31/86	FY85: \$65,000	TOTAL: \$512,164
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cronin, J. R.	HQ-EB/Devincenzi, D. L.	32-Geological Sci
Yuen, G. U.	HQ-EB/Rambler, M. B.	

<b>NAG 2-206</b>	<b>University of Arizona</b>	<b>1183</b>
Infrared spectroscopy of planetary atmospheres from the Kuiper Airborne Observatory		
<i>Period</i>	<i>Obligations</i>	
11/01/82-10/31/85	FY85: \$181,089	TOTAL: \$444,758
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Huebert, B. J.	ARC/Haughney, L. C.	11-Astronomy
Davis, D. S.		
Black, J. H.		

NSG 7415	Arizona State University	1177
Geological studies in planetology		
Period	Obligations	
12/01/77-12/01/86	FY85: \$290,000 TOTAL: \$1,751,943	
Prin. Invest.	NASA Tech. Officer	CASE Category
Greeley, R.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

<b>NAG 2-220</b>	<b>University of Arizona</b>	<b>1184</b>
Double arch mirror mount study		
<i>Period</i>	<i>Obligations</i>	
01/01/83-05/31/86	FY85: \$100,447	TOTAL: \$225,995
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hillman, D. W.	ARC/Melugin, R. K.	49-Engr, NEC
Vukobratovich, D.	ARC/Lee, J. H.	
Richard, R. M.		

<b>NSG 7548</b>	<b>Arizona State University</b>	<b>1178</b>
Studies in Martian geology		
<i>Period</i>	<i>Obligations</i>	
03/01/79-03/31/86	FY85: \$75,000	TOTAL: \$638,142
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Greeley, R.	HQ-EL/Hoyce, J. M.	31-Atmos Sci
	HQ-EL/Holt, H. E.	

<b>NAG 2-263</b>	<b>University of Arizona</b>	<b>1185</b>
Venus ionosphere investigation of some problems regarding composition and structure		
<i>Period</i>	<i>Obligations</i>	
11/01/83-10/31/85	FY85: \$25,000	TOTAL: \$49,348
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kumar, X. S.	ARC/Fimmel, R. O.	11-Astronomy
	ARC/Craig, R. A.	

NAGW 355		Northern Arizona University		1179
Photogeologic analysis of the JG-7 quadrangle of Ganymede				
<i>Period</i>		<i>Obligations</i>		
09/01/82-09/31/85	FY85: \$4,875	TOTAL: \$14,825		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Barnes, C. W.	HQ-EL/Boyce, J. M.	32-Geological Sci		
	HQ-EL/Holt, H. E.			

<b>NAG 2-290</b>	<b>University of Arizona</b>	<b>1186</b>
Evaluation of HgCdTe array with CCD readout		
<i>Period</i>	<i>Obligations</i>	
03/01/84-02/28/85	FY85:	TOTAL: \$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lebofsky, M. J.	ARC/McCreight, C. R.	11-Astronomy
Rieke, G. H.	ARC/Goebel, J. H.	

**NASA'S UNIVERSITY PROGRAM  
ARIZONA (Continued)**

NAG 2-319		University of Arizona	1187
Definition of the science requirements for SIRTf			
<i>Period</i>		<i>Obligations</i>	
07/01/84-10/31/85	FY85: \$45,442	TOTAL: \$45,442	
<i>Pnn. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Low, F. J.	ARC/Ramos, R.	11-Astronomy	
	ARC/Thorley, G.		

<b>NAG 3-485</b>	<b>University of Arizona</b>	<b>1194</b>
Nonlinear interactions in a heated subsonic jet		
<i>Period</i>	<i>Obligations</i>	
11/15/83-11/13/85	FY85: \$53,226	TOTAL: \$103,887
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Balsa, T. F.	LERC/Stone, J. R.	41-Aero Engr
	LERC/Miles, J. H.	

<b>NAG 2-320</b>	<b>University of Arizona</b>	<b>1188</b>
Definition phase of a multiband imaging photometer maps for the space infrared telescope facility (SIRTF)		
<i>Period</i>	<i>Obligations</i>	
09/01/84-12/31/85	FY85: \$421,152	TOTAL: \$421,152
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rieke, G.	ARC/Ramos, R.	11-Astronomy
	ARC/Thorlev. G.	

<b>NAG 5-34</b>	<b>University of Arizona</b>	<b>1195</b>
New seeing-limited studies of emission nebula		
<i>Period</i>	<i>Obligations</i>	
04/01/80-05/31/85	FY85:	TOTAL: \$14,791
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Craine, E. R.	GSFC/Gull, T. R.	11-Astronomy

<b>NAG 2-326</b>	<b>University of Arizona</b>	<b>1189</b>
<b>Effects of hypogravity on synaptogenesis in cell culture</b>		
<i>Period</i>	<i>Obligations</i>	
01/01/85-12/31/85	FY85: \$39,000	TOTAL: \$39,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gruener, R. P.	ARC/Souza, K. A.	51-Biological Sci

<b>NAG 5-38</b>	<b>University of Arizona</b>	<b>1196</b>
Study of the hottest white dwarfs from the Palomar-Green study		
<i>Period</i>	<i>Obligations</i>	
04/01/80-09/30/86	FY85: \$32,000	TOTAL: \$141,902
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Liebert, J.	GSFC/Kondo, Y.	11-Astronomy
Weymann, R. J.		
Bechtold, J.		

<b>NAG 3-41</b>	<b>University of Arizona</b>	<b>1190</b>
The application of probabilistic design theory to high temperature low cycle fatigue		
<i>Period</i>	<i>Obligations</i>	
06/01/80-12/31/84	FY85:	TOTAL: \$167,746
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Eiseman, P. R.	LERC/Ensign, C. R.	47-Materials Engr
Chu, C. K.		

<b>NAG 5-196</b>	<b>University of Arizona</b>	<b>1197</b>
<b>Spectroradiometric considerations for advanced land observation systems</b>		
<i>Period</i>	<i>Obligations</i>	
07/01/81-04/30/86	FY85: \$70,000	TOTAL: \$187,417
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Slater, P. N.	GSFC/Quentner, B.	13-Physics
	GSFC/Barnes, W. L.	

<b>NAG 3-357</b>	<b>University of Arizona</b>	<b>1191</b>
Noise generated by airfoils encountering high frequency convected disturbances-effects of airfoil shape, incidence angle and finite span sweep		
<i>Period</i>	<i>Obligations</i>	
11/30/82-12/27/85	FY85: \$35,000	TOTAL: \$135,205
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kerschen, E. J.	LERC/Groeneweg, J. F.	41-Aero Enor

<b>NAG 5-264</b>	<b>University of Arizona</b>	<b>1198</b>
Ultraviolet/optical/infrared observations of broad line radio galaxies		
<i>Period</i>	<i>Obligations</i>	
08/15/82-08/14/84	FY85:	TOTAL: \$21,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Puetter, R. C.	GSFC/Kondo, Y.	11-Astronomy
Rudy, R. J.		

<b>NAG 3-392</b>	<b>University of Arizona</b>	<b>1192</b>
The optics of surface plasmas polaritons		
<i>Period</i>	<i>Obligations</i>	
01/25/83-01/22/86	FY85: \$88,000	TOTAL: \$251,188
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stegeman, G. I.	LERC/Arrison, A.	13-Physics
Burke, J. J.		
Gibson, U. J.		

<b>NAG 5-326</b>	<b>University of Arizona</b>	<b>1199</b>
Deformation within and between lithospheric plates: A finite element analysis		
<i>Period</i>	<i>Obligations</i>	
06/01/83-08/31/86	FY85: \$9,772	TOTAL: \$61,610
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chase, C.	GSFC/Welker, J. E.	32-Geological Sci

<b>NAG 3-460</b>	<b>University of Arizona</b>	<b>1193</b>
The origin and control of large coherent structures in an axisymmetric turbulent jet		
<i>Period</i>	<i>Obligations</i>	
11/15/83-12/30/85	FY85: \$60,000	TOTAL: \$100,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Peterson, R. A.	LERC/Miles, J.	41-Aero Engr
Wygnanski, J. J.		

<b>NAG 5-340</b>	<b>University of Arizona</b>	<b>1200</b>
Monitoring the physical solar diameter		
<i>Period</i>		<i>Obligations</i>
07/01/83-01/31/85	FY85:	TOTAL: \$23,955
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hill, H. A.	GSFC/Wolff, C. L.	31-Atmos Sci

# **NASA'S UNIVERSITY PROGRAM** **ARIZONA (Continued)**

**NAG 5-411**                      **University of Arizona**                      **1201**  
Comparison of Voyager and International Ultraviolet Experiment  
luminous stars fluxes for hot sub

<i>Period</i>	<i>Obligations</i>	
06/15/84-03/14/85	FY85:	TOTAL: \$9,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Holberg, J. A.	GSFC/Kondo, Y.	11-Astronomy
Barry, D. C.		

**NAG 5-418**                      **University of Arizona**                      **1202**  
Study of moderate ionization of selected star winds

<i>Period</i>	<i>Obligations</i>	
04/01/84-03/31/85	FY85:	TOTAL: \$6,415
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Polidan, R. S.	GSFC/Kondo, Y.	11-Astronomy
Broadfoot, A. L.		
Snow, T. P.		

**NAG 5-427**                      **University of Arizona**                      **1203**  
Coordinated satellite and ground based observations of bright  
variable Seyfert I galaxies

<i>Period</i>	<i>Obligations</i>	
07/15/84-03/14/86	FY85: \$11,000	TOTAL: \$22,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Malkan, M.	GSFC/Kondo, Y.	11-Astronomy

**NAG 5-434**                      **University of Arizona**                      **1204**  
IUE observations of Saturn's rings white dwarf lyman alpha  
profiles

<i>Period</i>	<i>Obligations</i>	
07/01/84-06/30/86	FY85: \$25,000	TOTAL: \$38,300
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Holbert, J. B.	GSFC/Kondo, Y.	11-Astronomy
Lane, A. L.		

**NAG 5-441**                      **University of Arizona**                      **1205**  
Satellite observations of a dwarf nova in our therst

<i>Period</i>	<i>Obligations</i>	
07/15/84-04/14/86	FY85: \$20,590	TOTAL: \$31,790
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Polidan, R. S.	GSFC/Kondo, Y.	11-Astronomy
Peters, G. J.		

**NAG 5-444**                      **University of Arizona**                      **1206**  
Geoid as an indicator of large scale mantle connection and the  
proper motion of hot spots

<i>Period</i>	<i>Obligations</i>	
07/15/84-08/14/86	FY85: \$30,440	TOTAL: \$55,638
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chase, C. G.	GSFC/Welker, J. E.	32-Geological Sci

**NAG 5-545**                      **University of Arizona**                      **1207**  
A study of strongly magnetic variable white dwarfs

<i>Period</i>	<i>Obligations</i>	
06/01/85-05/31/86	FY85: \$8,715	TOTAL: \$8,715
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schmidt, G. D.	GSFC/Kondo, Y.	11-Astronomy
Liebert, J. W.		
Green, R. F.		

**NAG 5-560**                      **University of Arizona**                      **1208**  
Observations of hydrogen emission from Jupiter

<i>Period</i>	<i>Obligations</i>	
06/01/85-05/31/86	FY85: \$12,500	TOTAL: \$12,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shemansky, D.	GSFC/Kondo, Y.	11-Astronomy
Holberg, J. B.		

**NAG 5-588**                      **University of Arizona**                      **1209**  
An investigation of the broad line regions of Seyfert I galaxies

<i>Period</i>	<i>Obligations</i>	
07/15/85-07/14/86	FY85: \$8,000	TOTAL: \$8,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McAlary, C. W.	GSFC/Kondo, Y.	11-Astronomy
Mathis, J. S.		

**NAG 5-625**                      **University of Arizona**                      **1210**  
In situ investigation of the neutral population between 200 and  
1500 km altitude

<i>Period</i>	<i>Obligations</i>	
04/15/84-04/14/86	FY85: \$45,000	TOTAL: \$73,880
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ksieh, K. C.	GSFC/Early, L. J.	13-Physics
Fan, C. Y.	GSFC/Pless, R. H.	
Curtis, C. C.		

**NAG 5-703**                      **University of Arizona**                      **1211**  
The white dwarfs and inner accretion discs of three unusual  
dwarf vocae

<i>Period</i>	<i>Obligations</i>	
09/01/85-08/31/86	FY85: \$7,678	TOTAL: \$7,678
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wade, R. A.	GSFC/Kondo, Y.	11-Astronomy
Liebert, J. W.		

**NAG 8-442**                      **University of Arizona**                      **1212**  
Optical spectral identification of serendipitous sources found with  
HEAO-B

<i>Period</i>	<i>Obligations</i>	
09/15/82-12/31/85	FY85: \$23,492	TOTAL: \$59,122
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stocke, J. T.	MSFC/Johnson, W. G.	11-Astronomy
Liebert, J. W.		

**NAG 9-37**                      **University of Arizona**                      **1213**  
Rare earths and other trace elements in separates from  
chondrites

<i>Period</i>	<i>Obligations</i>	
03/01/83-02/28/86	FY85: \$143,000	TOTAL: \$354,100
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Boynton, W. V.	JSC/Browne, I. D.	12-Chemistry

**NAG 9-38**                      **University of Arizona**                      **1214**  
Brecciation and accretion history of meteorites

<i>Period</i>	<i>Obligations</i>	
03/01/83-08/31/85	FY85:	TOTAL: \$55,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilkening, L. L.	JSC/Dietrich, J. W.	12-Chemistry

**NASA'S UNIVERSITY PROGRAM**  
**ARIZONA (Continued)**

**NAG 9-39** **University of Arizona** **1215**  
 Meteoritic basalts  
*Period* *Obligations*  
 02/01/83-01/31/86 FY85: \$134,000 TOTAL: \$183,957  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Drake, M. J. JSC/Browne, I. D. 12-Chemistry

**NAG 9-122** **University of Arizona** **1216**  
 Second CCD reconnaissance of geosynchronous regions  
*Period* *Obligations*  
 08/01/85-01/15/86 FY85: \$20,226 TOTAL: \$20,226  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Zaman, A. J. JSC/Kessler, D. 47-Materials Engr

**NAGW 67** **University of Arizona** **1217**  
 Investigation of the chemical dynamics of the Venus atmosphere  
*Period* *Obligations*  
 06/01/80-02/29/84 FY85: TOTAL: \$97,173  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Sil, G. T. HQ-EL/Brinton, H. C. 31-Atmos Sci  
 HQ-EL/Brunk, W. E.

**NAGW 121** **University of Arizona** **1218**  
 Innovative research in optic and electro-optics for space astronomy  
*Period* *Obligations*  
 11/15/80-11/13/85 FY85: \$174,983 TOTAL: \$716,509  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Angel, J. R. HQ-E/Rosendhal, J. D. 11-Astronomy  
 Stockman, H. S. HQ-EP/Konkel, R. M.  
 Woolf, H. J.

**NAGW 135** **University of Arizona** **1219**  
 Geologic investigations of Io, Ganymede and Callisto  
*Period* *Obligations*  
 02/01/81-07/31/84 FY85: TOTAL: \$132,098  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Parmentier, E. M. HQ-EL/Boyce, J. M. 32-Geological Sci  
 Grieve, R. A. HQ-EL/Holt, H. E.

**NAGW 157** **University of Arizona** **1220**  
 Study of the interaction of the Jovian magnetosphere with the rings and the Galilean satellites  
*Period* *Obligations*  
 03/15/81-03/14/86 FY85: \$106,141 TOTAL: \$240,862  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Hood, L. L. HQ-EE/Lynch, J. T. 13-Physics  
 HQ-EL/Brinton, H. C.

**NAGW 192** **University of Arizona** **1221**  
 Higher-order gravity field at Jupiter  
*Period* *Obligations*  
 04/15/81-10/14/85 FY85: TOTAL: \$196,480  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Hubbard, W. B. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 224** **University of Arizona** **1222**  
 Speckle interferometry applied to asteroid and other solar system objects  
*Period* *Obligations*  
 08/01/81-12/31/84 FY85: TOTAL: \$114,790  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Drummond, J. D. HQ-EL/Brunk, W. E. 11-Astronomy  
 HQ-EL/Brinton, H. C.

**NAGW 227** **University of Arizona** **1223**  
 Skeletal muscle metabolism in hypokinetic rats  
*Period* *Obligations*  
 07/01/81-10/31/85 FY85: \$45,476 TOTAL: \$154,219  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Tischler, M. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAGW 247** **University of Arizona** **1224**  
 Cometary spectroscopy  
*Period* *Obligations*  
 11/01/81-10/31/85 FY85: \$39,966 TOTAL: \$132,682  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Larson, S. M. HQ-EL/Brinton, H. C. 11-Astronomy  
 HQ-EL/Hillman, J. J.

**NAGW 285** **University of Arizona** **1225**  
 Hydrogeomorphic studies of Mars  
*Period* *Obligations*  
 01/15/82-06/30/86 FY85: \$30,000 TOTAL: \$150,875  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Baker, V. R. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 331** **University of Arizona** **1226**  
 Optical spectrometer to measure atmospheric composition from entry probes  
*Period* *Obligations*  
 05/01/82-08/31/85 FY85: TOTAL: \$150,312  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Tomasko, M. HQ-EL/Brinton, H. C. 31-Atmos Sci  
 Wolfe, W. L. HQ-EL/Brunk, W. E.

**NAGW 338** **University of Arizona** **1227**  
 Effects of muscle atrophy on motor control  
*Period* *Obligations*  
 06/01/82-10/31/85 FY85: \$48,000 TOTAL: \$160,867  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Stuart, D. G. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAGW 340** **University of Arizona** **1228**  
 Origin and evolution of planetary atmospheres  
*Period* *Obligations*  
 07/01/82-06/30/86 FY85: \$106,711 TOTAL: \$361,724  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Lewis, J. S. HQ-EL/Brinton, H. C. 31-Atmos Sci  
 HQ-EL/Quaide, W. L.



<b>NAGW 414</b>	<b>University of Arizona</b>	<b>1229</b>
Asteroid population statistics		
<i>Period</i>	<i>Obligations</i>	
02/01/83-12/31/84	FY85:	TOTAL: \$58,771
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zellner, B. H.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Hillman, J. J.	
<b>NAGW 424</b>	<b>University of Arizona</b>	<b>1230</b>
Coupled physical and chemical evolution of the small terrestrial planets		
<i>Period</i>	<i>Obligations</i>	
02/01/83-07/31/84	FY85:	TOTAL: \$47,643
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Herbert, F.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	
<b>NAGW 428</b>	<b>University of Arizona</b>	<b>1231</b>
Crater modification by gravity		
<i>Period</i>	<i>Obligations</i>	
04/15/83-03/14/86	FY85: \$125,000	TOTAL: \$297,255
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Melosh, H. J.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Scott, D.	
<b>NAGW 492</b>	<b>University of Arizona</b>	<b>1232</b>
The Voyager ultraviolet spectrometer experiment science program		
<i>Period</i>	<i>Obligations</i>	
08/01/83-07/31/84	FY85:	TOTAL: \$303,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Broadfoot, A. L.	HQ-EL/Brinton, H. C.	11-Astronomy
	HQ-EL/Evans, N.	
<b>NAGW 500</b>	<b>University of Arizona</b>	<b>1233</b>
Venus aeronomy		
<i>Period</i>	<i>Obligations</i>	
10/01/83-03/31/86	FY85:	TOTAL: \$79,362
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kumar, S.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	
<b>NAGW 520</b>	<b>University of Arizona</b>	<b>1234</b>
Detector evaluation for a deep optical infrared survey		
<i>Period</i>	<i>Obligations</i>	
02/01/84-01/31/86	FY85: \$12,670	TOTAL: \$125,445
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lebofsky, G. J.	HQ-EZ/Boggess, N. W.	11-Astronomy
	HQ-EZ/Weiler, E. J.	
<b>NAGW 536</b>	<b>University of Arizona</b>	<b>1235</b>
Evolution of the Martian atmosphere: Atmospheric erosion as a consequence of energetic impacts		
<i>Period</i>	<i>Obligations</i>	
03/15/84-06/14/85	FY85:	TOTAL: \$18,330
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lewis, J. S.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	
<b>NAGW 539</b>	<b>University of Arizona</b>	<b>1236</b>
Effects of hypogravity on synaptogenesis in cell culture		
<i>Period</i>	<i>Obligations</i>	
01/01/84-09/30/85	FY85:	TOTAL: \$39,960
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gruenera, R. P.	HQ-EB/Halstead, T. W.	51-Biological Sci
<b>NAGW 546</b>	<b>University of Arizona</b>	<b>1237</b>
Mars ball project		
<i>Period</i>	<i>Obligations</i>	
03/01/84-08/28/85	FY85:	TOTAL: \$50,286
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hunter, D. M.	HQ-EL/Quaide, W. L.	49-Engr, NEC
	HQ-EL/French, B. M.	
<b>NAGW 561</b>	<b>University of Arizona</b>	<b>1238</b>
Design study of an entry probe spectro reflectometer		
<i>Period</i>	<i>Obligations</i>	
02/15/84-02/14/85	FY85:	TOTAL: \$43,947
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sill, G. T.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	
<b>NAGW 587</b>	<b>University of Arizona</b>	<b>1239</b>
Stellar observations with the Voyager EUV objective grating spectrograph		
<i>Period</i>	<i>Obligations</i>	
03/01/84-02/28/86	FY85: \$81,000	TOTAL: \$131,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Holberg, J.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Weiler, E. J.	
<b>NAGW 596</b>	<b>University of Arizona</b>	<b>1240</b>
Studies of planetary extended atmospheres		
<i>Period</i>	<i>Obligations</i>	
02/01/84-03/31/86	FY85: \$91,302	TOTAL: \$106,302
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hunter, D. M.	HQ-EL/Brinton, H. C.	11-Astronomy
	HQ-EL/Bergstrahl, J. T.	
<b>NAGW 610</b>	<b>University of Arizona</b>	<b>1241</b>
Scientific program in planetary atmospheres studies		
<i>Period</i>	<i>Obligations</i>	
05/01/84-04/30/86	FY85: \$90,000	TOTAL: \$180,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Broadfoot, A. L.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Quaide, W. L.	
<b>NAGW 639</b>	<b>University of Arizona</b>	<b>1242</b>
Analysis of the structure of clouds of Titan Jupiter and Saturn		
<i>Period</i>	<i>Obligations</i>	
08/01/84-07/31/85	FY85:	TOTAL: \$79,820
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tomasko, M. G.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NASA'S UNIVERSITY PROGRAM  
ARIZONA (Continued)**

**NAGW 649** **University of Arizona** **1243**  
Particle excitation airglow and H2 vibrational disequilibrium in the atmosphere of Jupiter  
*Period* *Obligations*  
09/01/84-10/31/85 FY85: TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shemansky, D. E. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NAGW 669** **University of Arizona** **1244**  
Spacecraft instrumentation for geochemistry and cosmochemistry  
*Period* *Obligations*  
08/11/84-08/10/85 FY85: \$19,579 TOTAL: \$19,579  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Boynton, W. V. HQ-EL/Quaide, W. L. 12-Chemistry  
HQ-EL/Vescelus, F.

**NAGW 670** **University of Arizona** **1245**  
Evaluation of techniques for estimating vegetation parameters in arid lands using satellite data  
*Period* *Obligations*  
09/01/84-08/31/86 FY85: \$120,000 TOTAL: \$120,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hutchinson, C. HQ-EE/Tuyahov, A. J. 39-Env Sci, NEC

**NAGW 680** **University of Arizona** **1246**  
Origin of the Earth's Moon  
*Period* *Obligations*  
01/01/85-12/21/86 FY85: \$100,203 TOTAL: \$100,203  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Drake, M. J. HQ-E/Rosendhal, J. D.  
HQ-EP/Konkel, R. M. 19-Phys Sci, NEC

**NAGW 693** **University of Arizona** **1247**  
Establishment of a center for organic separations and pharmaceutical research  
*Period* *Obligations*  
10/15/84-12/31/85 FY85: \$450,000 TOTAL: \$450,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bier, M. HQ-EN/Halpern, R. E. 51-Biological Sci

**NAGW 716** **University of Arizona** **1248**  
Physical studies of fast-moving asteroids  
*Period* *Obligations*  
02/01/85-01/31/86 FY85: \$54,290 TOTAL: \$54,290  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Zellner, B. H. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NAGW 744** **University of Arizona** **1249**  
A study of the Io plasma torus  
*Period* *Obligations*  
05/15/85-05/14/86 FY85: \$44,000 TOTAL: \$44,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shemansky, D. E. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NAGW 753** **University of Arizona** **1250**  
Solar wind Moon plasma sheath  
*Period* *Obligations*  
06/01/85-05/31/86 FY85: \$10,384 TOTAL: \$10,384  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sonett, C. P. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NAGW 754** **University of Arizona** **1251**  
Mars data analyses terrestrial planets comparative planetology  
*Period* *Obligations*  
06/01/85-05/31/86 FY85: \$51,344 TOTAL: \$51,344  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gehrels, T. HQ-EL/Quaide, W. L. 32-Geological Sci

**NAGW 763** **University of Arizona** **1252**  
Formation of stars and stellar systems  
*Period* *Obligations*  
07/15/85-07/14/87 FY85: \$244,914 TOTAL: \$244,914  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
White, S. D. HQ-EZ/Stencel, R. E. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NAGW 804** **University of Arizona** **1253**  
The CCD transit instrument deep survey  
*Period* *Obligations*  
09/01/85-08/31/86 FY85: \$85,000 TOTAL: \$85,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McGraw, J. T. HQ-EZ/Stencel, R. E. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NAGW 807** **University of Arizona** **1254**  
Measurements of atmospheric ozone profiles for trend evaluation and spectral analysis of shuttle glow  
*Period* *Obligations*  
08/01/85-07/31/86 FY85: \$210,455 TOTAL: \$210,455  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Broadfoot, A. L. HQ-EE/Demore, W. B. 31-Atmos Sci  
HQ-EE/Hampson, R. F.

**NAS 2-10890** **University of Arizona** **1255**  
Operation and maintenance of the NASA-owned 1.5 meter telescope located at Mt. Lemmon, Arizona  
*Period* *Obligations*  
01/01/81-12/31/85 FY85: \$90,998 TOTAL: \$471,815  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rieke, M. ARC/Haughney, L. C. 11-Astronomy  
ARC/Gillespie, C. M.

**NAS 2-11647** **University of Arizona** **1256**  
Analysis of photometry and polarimetry of Jupiter and Saturn from the Pioneer 10/11 missions  
*Period* *Obligations*  
05/16/83-10/01/84 FY85: TOTAL: \$96,613  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tomasko, M. G. ARC/Fimmel, R. O. 11-Astronomy  
Doose, L. R. ARC/Craig, R. A.  
Smith, P. H.

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## **ARIZONA (Continued)**

**NAS 2-12230**                      **University of Arizona**                      **1257**  
 Fabrication of one pair of spherical mirrors  
*Period*                                      *Obligations*  
 08/06/85-11/04/85                      FY85: \$39,784                      TOTAL: \$39,784  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Sumner, R. E.                      ARC/Ennis, D. J.                      42-Astro Engr

**NAS 8-34734**                      **University of Arizona**                      **1264**  
 The optical characteristics of lightning  
*Period*                                      *Obligations*  
 07/01/82-11/30/84                      FY85:                      TOTAL: \$55,250  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Krider, E. P.                      MSFC/Christian, H. J.                      31-Atmos Sci  
    MSFC/Smith, G. T.

**NAS 5-25733**                      **University of Arizona**                      **1258**  
 Space telescope/high resolution spectrograph (HRS) extragalactic studies  
*Period*                                      *Obligations*  
 06/18/79-04/01/86                      FY85: \$4,200                      TOTAL: \$18,916  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Weymann, R. J.                      GSFC/Vitagliano, H. D.                      11-Astronomy

**NAS 8-36477**                      **University of Arizona**                      **1265**  
 Optical studies of lightning  
*Period*                                      *Obligations*  
 09/26/85-09/25/88                      FY85: \$68,492                      TOTAL: \$68,492  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Krider, E. P.                      MSFC/Christian, H. J.                      13-Physics  
    MSFC/Blakeslee, R.

**NAS 5-26575**                      **University of Arizona**                      **1259**  
 Development of a new class of liquid helium cooled Fabry-Perot interference filter  
*Period*                                      *Obligations*  
 04/29/81-05/29/84                      FY85:                      TOTAL: \$79,931  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Low, F. J.                      GSFC/Arens, J. F.                      11-Astronomy  
 Nishimura, N.                      GSFC/Heaney, J. B.

**NAS 9-16838**                      **University of Arizona**                      **1266**  
 Lymphocyte proliferation in weightlessness  
*Period*                                      *Obligations*  
 02/23/83-09/30/86                      FY85: \$7,000                      TOTAL: \$22,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Criswell, B. S.                      JSC/McCollum, G. W.                      59-Life Sci, NEC

**NAS 5-26869**                      **University of Arizona**                      **1260**  
 Origin of plasmas in the Earth's neighborhood (OPEN) mission  
*Period*                                      *Obligations*  
 05/14/82-09/30/86                      FY85: \$8,129                      TOTAL: \$69,424  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Sonett, C. P.                      GSFC/O'Brien, J. J.                      13-Physics

**NASW 3454**                      **University of Arizona**                      **1267**  
 Design study for a scanning facility for Earth crossing asteroids  
*Period*                                      *Obligations*  
 10/16/80-11/30/85                      FY85: \$80,730                      TOTAL: \$1,006,727  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Gehrels, T.                      HQ-EL/Brunk, W. E.                      11-Astronomy  
    HQ-EL/Hillman, J. J.

**NAS 5-27382**                      **University of Arizona**                      **1261**  
 LANDSAT-D image data quality analysis calibration of the thematic mapper and the multispectral  
*Period*                                      *Obligations*  
 10/29/82-06/28/86                      FY85:                      TOTAL: \$310,257  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Slater, P.                      GSFC/Gordon, F., Jr.                      99-Multi-Discip

**NASW 3627**                      **University of Arizona**                      **1268**  
 Comet Halley neutral gas experiment  
*Period*                                      *Obligations*  
 05/01/82-01/16/86                      FY85: \$53,100                      TOTAL: \$234,598  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Hsieh, K. C.                      HQ-EL/Brunk, W. E.                      11-Astronomy  
    HQ-EL/Brinton, H. C.

**NAS 8-32950**                      **University of Arizona**                      **1262**  
 Hormone purification by isoelectric focusing in space  
*Period*                                      *Obligations*  
 03/29/78-12/31/84                      FY85: \$148,000                      TOTAL: \$820,800  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Bier, M.                      MSFC/Moore, W. W., Jr.                      59-Life Sci, NEC

**NASW 3655**                      **University of Arizona**                      **1269**  
 Symposium and book on planet Saturn  
*Period*                                      *Obligations*  
 07/15/82-12/31/83                      FY85:                      TOTAL: \$10,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Gehrels, T.                      HQ-EL/Brunk, W. E.                      11-Astronomy  
    HQ-EL/Brinton, H. C.

**NAS 8-33815**                      **University of Arizona**                      **1263**  
 Computer studies of baroclinic stability in spherical geometry  
*Period*                                      *Obligations*  
 03/07/80-09/30/84                      FY85:                      TOTAL: \$74,997  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Gall, R. L.                      MSFC/Fowles, W. W.                      31-Atmos Sci  
    MSFC/Smith, G. T.

**NASW 3703**                      **University of Arizona**                      **1270**  
 Space astronomy infrared detector development  
*Period*                                      *Obligations*  
 11/01/82-10/31/85                      FY85:                      TOTAL: \$454,422  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
 Low, F. J.                      HQ-EZ/Boggess, N. W.                      11-Astronomy  
    HQ-EZ/Weiler, E. J.



**NASA'S UNIVERSITY PROGRAM**  
**ARIZONA (Continued)**

**NGR 03-002-371 University of Arizona 1286**  
 Far infrared observations of galactic and extra-galactic sources of radiation  
*Period Obligations*  
 09/01/73-12/31/85 FY85: \$116,000 TOTAL: \$909,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hoffmann, W. F. HQ-EZ/Boggess, N. W. 11-Astronomy  
 HQ-EZ/Weiler, E. J.

**NGT 03-002-800 University of Arizona 1287**  
 NASA graduate student researchers program  
*Period Obligations*  
 07/01/80-06/30/85 FY85: TOTAL: \$378,846  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Farley, D. T. HQ-RT/Goorjian, P. M. 41-Aero Engr

**NGT 03-002-801 University of Arizona 1288**  
 NASA graduate student researchers program  
*Period Obligations*  
 04/01/82-03/31/85 FY85: TOTAL: \$36,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Larson, H. P. HQ-LB/Owens, F. C. 11-Astronomy

**NGT 03-002-802 University of Arizona 1289**  
 NASA graduate student researchers program  
*Period Obligations*  
 05/01/83-06/30/85 FY85: TOTAL: \$23,920  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Convertino, V. HQ-LB/Owens, F. C. 51-Biological Sci

**NGT 03-002-803 University of Arizona 1290**  
 NASA graduate student researchers program  
*Period Obligations*  
 08/16/85-08/15/86 FY85: \$17,800 TOTAL: \$17,800  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lewis, J. S. HQ-LE/Owens, F. C. 11-Astronomy

**NGT 03-002-804 University of Arizona 1291**  
 NASA graduate student researchers program  
*Period Obligations*  
 08/16/85-08/15/86 FY85: \$17,800 TOTAL: \$17,800  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Smith, B. A. HQ-LE/Owens, F. C. 11-Astronomy

**NGT 03-002-805 University of Arizona 1292**  
 NASA graduate student researchers program  
*Period Obligations*  
 08/20/85-08/19/86 FY85: \$16,321 TOTAL: \$16,321  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lebofsky, M. J. HQ-LE/Owens, F. C. 11-Astronomy

**NGT 03-002-806 University of Arizona 1293**  
 NASA graduate student researchers program  
*Period Obligations*  
 08/01/85-07/31/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Levy, E. H. HQ-LE/Owens, F. C. 32-Geological Sci

**NGT 03-002-807 University of Arizona 1294**  
 NASA graduate student researchers program  
*Period Obligations*  
 09/01/85-08/31/86 FY85: \$16,750 TOTAL: \$16,750  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Rieke, G. HQ-LE/Owens, F. C. 11-Astronomy

**NGT 03-002-808 University of Arizona 1295**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/85-05/31/86 FY85: \$15,445 TOTAL: \$15,445  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Krider, E. P. HQ-LE/Owens, F. C. 31-Atmos Sci

**NGT 03-002-809 University of Arizona 1296**  
 NASA graduate student researchers program  
*Period Obligations*  
 08/01/85-07/31/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Glezer, A. Unavailable 46-Mech Engr

**NSG 7020 University of Arizona 1297**  
 Lunar induced and permanent magnetism in the lunar data analysis and synthesis program  
*Period Obligations*  
 03/01/74-01/31/86 FY85: \$38,000 TOTAL: \$930,652  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hood, L. L. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NSG 7045 University of Arizona 1298**  
 Interiors of the giant planets  
*Period Obligations*  
 04/01/74-03/31/86 FY85: \$40,748 TOTAL: \$422,942  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hubbard, W. B. HQ-EL/Brinton, H. C. 11-Astronomy  
 HQ-EL/Bergstrahl, J. T.

**NSG 7070 University of Arizona 1299**  
 Planetary spectroscopy  
*Period Obligations*  
 06/01/74-05/31/86 FY85: \$139,910 TOTAL: \$1,265,457  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Fink, U. W. HQ-EL/Brunk, W. E. 11-Astronomy  
 HQ-EL/Hillman, J. J.

**NSG 7101 University of Arizona 1300**  
 Study structure of astrophysical plasma and turbulent fluctuations  
*Period Obligations*  
 11/18/74-09/30/85 FY85: \$84,166 TOTAL: \$643,484  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jokipii, J. R. HQ-EZ/Ormes, J. F. 11-Astronomy  
 HQ-EZ/Opp, A. G.

# **NASA'S UNIVERSITY PROGRAM ARIZONA (Continued)**

**NSG 7114**                      **University of Arizona**                      **1301**  
Infrared observations of the planets  
*Period*                                      *Obligations*  
02/20/75-05/31/86                      FY85: \$40,114                      TOTAL: \$309,963  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Lebofsky, L. A.                      HQ-EL/Brinton, H. C.                      11-Astronomy  
HQ-EL/Bergstrahl, J. T.

**NSG 7146**                      **University of Arizona**                      **1302**  
Geologic investigation of Mercury from Mariner 10 television data  
*Period*                                      *Obligations*  
07/01/75-01/31/86                      FY85: \$75,614                      TOTAL: \$684,050  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Strom, R. G.                      HQ-EL/Boyce, J. M.                      32-Geological Sci  
HQ-EL/Holt, H. E.

**NSG 7333**                      **University of Arizona**                      **1303**  
Study of isoelectric focusing for proteins and peptide hormones in a microgravity environment  
*Period*                                      *Obligations*  
04/01/79-04/30/86                      FY85: \$150,000                      TOTAL: \$1,850,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Bier, M.                      HQ-EL/Tuyahov, A. J.                      13-Physics

**NSG 7419**                      **University of Arizona**                      **1304**  
Generation and behavior of solar system magnetic fields  
*Period*                                      *Obligations*  
03/01/79-01/31/86                      FY85: \$88,852                      TOTAL: \$407,406  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Levy, E. H.                      HQ-EL/Boyce, J. M.                      32-Geological Sci  
HQ-EL/Taylor, L. A.

**NSG 7485**                      **University of Arizona**                      **1305**  
Stratospheric aeronomy  
*Period*                                      *Obligations*  
09/01/78-09/30/85                      FY85: \$51,061                      TOTAL: \$373,043  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Hunten, D. M.                      HQ-EE/Butler, D. M.                      31-Atmos Sci  
HQ-EE/Watson, R. T.

**NSG 7558**                      **University of Arizona**                      **1306**  
Planetary aeronomy and related studies  
*Period*                                      *Obligations*  
04/01/79-03/31/86                      FY85: \$42,005                      TOTAL: \$250,314  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Hunten, D. M.                      HQ-EL/Brinton, H. C.                      31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NSG 7573**                      **University of Arizona**                      **1307**  
Scattering of light by amonia crystals  
*Period*                                      *Obligations*  
09/01/78-08/31/85                      FY85:                      TOTAL: \$344,528  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Tomasko, M. G.                      HQ-EL/Brinton, H. C.                      31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NSG 7576**                      **University of Arizona**                      **1308**  
Geochemical evolution of the Moon and igneous meteorites  
*Period*                                      *Obligations*  
05/01/79-01/31/86                      FY85:                      TOTAL: \$543,209  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Drake, M. J.                      HQ-EL/Boyce, J. M.                      32-Geological Sci  
HQ-EL/French, B. M.

## **ARKANSAS**

**NAG 3-583**                      **University of Arkansas - Fayetteville**                      **1309**  
Analysis of stratified boundary layer flows  
*Period*                                      *Obligations*  
11/10/84-11/09/85                      FY85: \$15,529                      TOTAL: \$15,529  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Wills, L. D.                      LERC/Gaugler, R. E.                      46-Mech Engr  
LERC/Svehla, R. A.

**NAG 9-81**                      **University of Arkansas - Fayetteville**                      **1310**  
Chemical and physical studies of type 3 chondrites  
*Period*                                      *Obligations*  
03/01/84-03/01/86                      FY85: \$26,500                      TOTAL: \$51,500  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Sears, D. W.                      JSC/Browne, I. D.                      32-Geological Sci

**NAG 2-147**                      **University of Arkansas - Little Rock**                      **1311**  
A feasibility study of the application of an airborne spectrophone instrument for the measurement of aerosol light absorption  
*Period*                                      *Obligations*  
12/01/81-12/31/85                      FY85: \$18,698                      TOTAL: \$58,581  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Mazumder, M. K.                      ARC/Ragent, B.                      31-Atmos Sci  
Wilson, J. D.  
Tennal, K. B.

## **CALIFORNIA**

**NAG 1-474**                      **California Institute of Technology**                      **1312**  
An initiation program on toughness of matrix materials for advanced composites  
*Period*                                      *Obligations*  
05/01/84-04/30/86                      FY85: \$45,000                      TOTAL: \$69,998  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Knauss, W. G.                      LARC/Crews, J. H., Jr. 47-Materials Engr  
LARC/Johnston, N. J.

**NAG 2-1**                      **California Institute of Technology**                      **1313**  
Submillimeter line astronomy on the NASA 91.5 cm/ airborne telescope  
*Period*                                      *Obligations*  
10/01/79-02/28/86                      FY85: \$137,210                      TOTAL: \$472,360  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Phillips, T. G.                      ARC/Haughney, L. C.                      11-Astronomy  
Keene, J.

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NAG 2-194 California Institute of Technology 1314**  
Visualization and control of vortex shedding from a cone at high angles of attack  

Period	Obligations	
09/01/82-09/30/85	FY85: \$24,980	TOTAL: \$75,175
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Culick, F. E.	ARC/Peake, D. J.	41-Aero Engr
	ARC/Davis, S.	

**NAG 2-267 California Institute of Technology 1315**  
Photochemical production of H<sub>2</sub>SO<sub>4</sub> aerosols on Venus  

Period	Obligations	
10/01/83-03/31/86	FY85: \$25,000	TOTAL: \$55,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yung, Y. L.	ARC/Fimmel, R. O.	11-Astronomy
	ARC/Craig, R. A.	

**NAG 3-179 California Institute of Technology 1316**  
Instability of nonuniform flows  

Period	Obligations	
08/01/81-10/31/84	FY85:	TOTAL: \$220,695
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Saffman, P. G.	LERC/Durbin, P. A.	29-Math/Computer, NEC

**NAG 3-466 California Institute of Technology 1317**  
Free-surface phenomena under low-and zero-gravity conditions  

Period	Obligations	
08/25/83-11/15/84	FY85:	TOTAL: \$104,943
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Coles, D.	LERC/Chai, A. T.	41-Aero Engr

**NAG 3-615 California Institute of Technology 1318**  
Input current shaped ac-to-dc converters  

Period	Obligations	
02/15/85-02/14/86	FY85: \$75,000	TOTAL: \$75,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Middlebrook, R. D.	LERC/Hansen, I. G.	45-Elec Engr
	LERC/Terdan, F. F.	

**NAG 5-4 California Institute of Technology 1319**  
Research on long exposure observations of extragalactic objects  

Period	Obligations	
03/01/80-01/31/85	FY85:	TOTAL: \$104,161
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sargent, W. L.	GSFC/Kondo, Y.	11-Astronomy
Malkan, M.		
Gull, T. R.		

**NAG 5-66 California Institute of Technology 1320**  
Observations of selected Jovian atmospheric features  

Period	Obligations	
05/26/80-09/30/83	FY85:	TOTAL: \$39,800
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Trauger, J. T.	GSFC/Kondo, Y.	11-Astronomy
Allen, M. A.		
Gladstone, G. R.		

**NAG 5-250 California Institute of Technology 1321**  
Observations of variable type 1 Seyfert galaxies  

Period	Obligations	
07/01/82-01/31/86	FY85: \$8,500	TOTAL: \$48,835
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Oke, J. B.	GSFC/Kondo, Y.	11-Astronomy

**NAG 5-315 California Institute of Technology 1322**  
Dynamic interpretations of geoid anomalies  

Period	Obligations	
04/15/83-08/14/86	FY85: \$40,001	TOTAL: \$100,001
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hager, B. H.	GSFC/Welker, J. E.	32-Geological Sci

**NAG 5-337 California Institute of Technology 1323**  
Ultraviolet optical infrared spectrophotometry polarimetry of low-high polarization quasars  

Period	Obligations	
07/01/83-06/30/86	FY85:	TOTAL: \$19,300
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Moore, R. L.	GSFC/Kondo, Y.	11-Astronomy
Cohen, M. H.		
Malkan, M. A.		

**NAG 5-508 California Institute of Technology 1324**  
Investigations of Solar Maximum Mission data  

Period	Obligations	
03/01/85-02/28/86	FY85: \$9,500	TOTAL: \$9,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zirin, H.	GSFC/Bullock, G. D.	13-Physics

**NAG 8-438 California Institute of Technology 1325**  
Studies of solar gamma-ray bursts  

Period	Obligations	
07/01/82-12/31/83	FY85:	TOTAL: \$20,360
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zirin, H.	MSFC/Stone, J. F.	11-Astronomy

**NAG 8-460 California Institute of Technology 1326**  
Comparison of Finstein's stellar X-ray fluxes with helium 10830 line intensities  

Period	Obligations	
11/01/83-10/31/84	FY85:	TOTAL: \$9,143
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zirin, H.	MSFC/Johnson, W. G.	11-Astronomy

**NAG 8-502 California Institute of Technology 1327**  
Post launch analysis of data from the high energy astrophysical observatory heavy nuclei experiment (HEAO-C3)  

Period	Obligations	
10/01/84-09/30/85	FY85: \$243,000	TOTAL: \$243,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stone, E. C.	MSFC/Johnson, W. G.	11-Astronomy

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAG 8-539 California Institute of Technology 1328**  
Blazars and quasars in a complete radio sample  
*Period Obligations*  
08/01/85-07/31/86 FY85: \$7,627 TOTAL: \$7,627  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Oke, J. B. MSFC/Johnson, W. G. 11-Astronomy  
Impey, C. D.  
Tapia, S.

**NAG 9-43 California Institute of Technology 1329**  
Geochemical and isotopic investigation of lunar and planetary materials and interplanetary dust  
*Period Obligations*  
02/01/83-02/01/86 FY85: \$1,054,980 TOTAL: \$2,851,980  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wasserburg, G. J. JSC/Browne, I. D. 32-Geological Sci

**NAG 9-46 California Institute of Technology 1330**  
Application of stable isotope measurement to the origin and history of lunar samples and meteorites  
*Period Obligations*  
02/01/83-02/01/86 FY85: \$82,500 TOTAL: \$237,481  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Epstein, S. JSC/Dietrich, J. W. 12-Chemistry

**NAG 9-94 California Institute of Technology 1331**  
Solar system chemistry  
*Period Obligations*  
02/01/85-01/31/86 FY85: \$93,000 TOTAL: \$93,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Burnett, D. S. JSC/Browne, I. D. 47-Materials Engr

**NAG 9-103 California Institute of Technology 1332**  
Experimental petrology of ironhjemetite early siliceous crust  
*Period Obligations*  
03/01/85-02/28/86 FY85: \$44,000 TOTAL: \$44,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wyllie, P. J. JSC/Phinney, W. C. 19-Phys Sci, NEC

**NAG 9-105 California Institute of Technology 1333**  
Experimental studies of phase equilibria of meteorites planetary interiors  
*Period Obligations*  
01/01/85-02/28/86 FY85: \$86,000 TOTAL: \$86,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Stolper, E. JSC/Browne, I. D. 19-Phys Sci, NEC

**NAGW 58 California Institute of Technology 1334**  
Dynamics of planetary atmospheres  
*Period Obligations*  
05/01/80-06/30/86 FY85: \$120,000 TOTAL: \$576,464  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ingersoll, A. P. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Quaide, W. L.

**NAGW 107 California Institute of Technology 1335**  
Development of InSb detectors for submillimeter astronomy  
*Period Obligations*  
11/01/80-10/31/85 FY85: \$90,000 TOTAL: \$446,977  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Phillips, T. G. HQ-EZ/Boggess, N. W. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NAGW 159 California Institute of Technology 1336**  
Measurement of Jovian winds from Voyager images  
*Period Obligations*  
03/15/81-03/14/85 FY85: TOTAL: \$159,990  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ingersoll, A. P. HQ-EL/Brinton, H. C. 13-Physics  
HQ-EL/Evans, N.

**NAGW 185 California Institute of Technology 1337**  
High pressure cosmochemistry applied to major planetary interiors  
*Period Obligations*  
04/01/81-11/30/85 FY85: \$94,973 TOTAL: \$280,991  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Stevenson, D. J. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NAGW 202 California Institute of Technology 1338**  
Sputtering processes near Jupiter and Saturn  
*Period Obligations*  
05/15/81-05/14/85 FY85: \$40,000 TOTAL: \$260,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Haff, P. K. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NAGW 205 California Institute of Technology 1339**  
Isentropic compression and decompression of outer solar system molecular materials  
*Period Obligations*  
06/01/81-11/30/83 FY85: TOTAL: \$192,086  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ahrens, T. J. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NAGW 223 California Institute of Technology 1340**  
Sources sinks and variability of Mar's atmospheric water vapor  
*Period Obligations*  
07/01/81-03/31/84 FY85: TOTAL: \$49,016  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Farmer, C. B. HQ-EL/Murphy, R. E. 31-Atmos Sci

**NAGW 254 California Institute of Technology 1341**  
Photochemical processes in the primitive atmosphere of the Earth  
*Period Obligations*  
10/15/81-10/14/85 FY85: \$39,000 TOTAL: \$110,246  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Yung, Y. L. HQ-EB/Devincenzi, D. L. 12-Chemistry  
HQ-EB/Rambler, M. B.



**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAGW 255 California Institute of Technology 1342**  
Active region properties basic to the solar cycle

Period	Obligations	
02/08/82-11/30/84	FY85:	TOTAL: \$124,940
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Martin, S. F.	HQ-EZ/Bohlin, J. D.	19-Phys Sci, NEC

**NAGW 257 California Institute of Technology 1343**  
Studies of phase equilibria of meteorites and planetary interiors

Period	Obligations	
11/01/81-12/31/84	FY85:	TOTAL: \$202,611
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stolper, E.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/French, B. M.	

**NAGW 313 California Institute of Technology 1344**  
Spatial variation in Jovian photochemistry

Period	Obligations	
04/01/82-12/31/85	FY85:	TOTAL: \$125,964
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yung, Y. L.	HQ-EL/Brinton, H. C.	31-Atmos Sci
Allen, M.	HQ-EL/Brunk, W. E.	

**NAGW 413 California Institute of Technology 1345**  
Photochemical modeling of trace species in the stratosphere and mesosphere

Period	Obligations	
01/01/83-10/31/86	FY85: \$255,971	TOTAL: \$471,337
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yung, Y. L.	HQ-EE/Smith, M. H.	31-Atmos Sci
Kruse, T. H.	HQ-EE/Demore, W. B.	

**NAGW 450 California Institute of Technology 1346**  
Surface modification of icy satellites by internal processes

Period	Obligations	
05/01/83-07/31/85	FY85:	TOTAL: \$49,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stevenson, D. J.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAGW 549 California Institute of Technology 1347**  
Mars solar volatiles topographic and geologic setting

Period	Obligations	
03/01/84-12/31/86	FY85: \$42,680	TOTAL: \$83,085
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Murray, B.	HQ-EZ/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAGW 555 California Institute of Technology 1348**  
Heat balance studies of the Martian polar regions

Period	Obligations	
02/15/84-04/30/86	FY85: \$38,000	TOTAL: \$76,270
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ingersoll, A. P.	HQ-EL/Brinton, H. C.	32-Geological Sci
	HQ-EL/Brunk, W. E.	

**NAGW 640 California Institute of Technology 1349**  
Seed money to begin the development of improved CCD sensors for astronomical and scientific uses

Period	Obligations	
08/01/84-07/31/85	FY85:	TOTAL: \$59,806
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Westphal, J.	HQ-EZ/Weiler, E. J.	11-Astronomy
	HQ-EZ/Boggess, N. W.	

**NAS 5-20721 California Institute of Technology 1350**  
High energy cosmic rays experiment for international Sun Earth Explorer spacecraft

Period	Obligations	
02/07/75-11/11/84	FY85:	TOTAL: \$2,017,739
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stone, E. C.	GSFC/Wales, R. O.	13-Physics

**NAS 5-25451 California Institute of Technology 1351**  
Wide field/planetary camera for space telescope

Period	Obligations	
01/01/79-07/01/87	FY85: \$1,680,000	TOTAL: \$8,097,586
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Westphal, J.	GSFC/White, R. A.	11-Astronomy

**NAS 5-25789 California Institute of Technology 1352**  
Data reduction and analysis of interplanetary monitoring platform (IMP) electron isotope spectrometer experiment

Period	Obligations	
03/24/80-09/30/84	FY85:	TOTAL: \$380,226
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stone, E. C.	GSFC/Wales, R. O.	11-Astronomy

**NAS 5-27226 California Institute of Technology 1353**  
Introplate deformation, stress in the lithosphere and the driving mechanism for plate motions

Period	Obligations	
06/29/82-07/01/86	FY85: \$82,643	TOTAL: \$202,123
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hager, B. H.	GSFC/Mead, G. D.	32-Geological Sci

**NAS 5-27269 California Institute of Technology 1354**  
Definition phase of the science program for a photometric filtergraph for the solar optical telescope (SOT)

Period	Obligations	
05/26/82-10/31/85	FY85: \$315,700	TOTAL: \$724,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zirin, H.	GSFC/Richard, H. L.	31-Atmos Sci

**NAS 5-28441 California Institute of Technology 1355**  
Data reduction and analysis for IMP spacecraft the interplanetary monitoring platform (IMP)-8 spacecraft

Period	Obligations	
01/01/85-12/31/85	FY85: \$69,984	TOTAL: \$69,984
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stone, E. C.	GSFC/Wales, R. O.	11-Astronomy

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAS 5-28449 California Institute of Technology 1356**  
Data reduction and analysis for ice spacecraft's cosmic ray experiment  
*Period* *Obligations*  
11/12/84-11/11/85 FY85: \$88,000 TOTAL: \$88,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stone, D. E. GSFC/Wales, R. O. 31-Atmos Sci

**NCC 2-309 California Institute of Technology 1363**  
Examination of the effect of vortex breakdown on high angle of attack aerodynamics  
*Period* *Obligations*  
07/01/84-06/30/86 FY85: TOTAL: \$40,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Culick, F. E. ARC/Schiff, L. B. 41-Aero Engr

**NAS 8-27978 California Institute of Technology 1357**  
Design, development and operation of the ACR-7 heavy nuclei experiment under the HEAO program  
*Period* *Obligations*  
06/23/72-10/31/84 FY85: TOTAL: \$1,808,476  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stone, E. C. MSFC/Stone, J. F. 11-Astronomy  
Vogt, R. E. MSFC/Lusk, J. L.

**NCC 2-319 California Institute of Technology 1364**  
Cross sections for inelastic-molecule collisions  
*Period* *Obligations*  
09/01/84-08/31/86 FY85: \$10,599 TOTAL: \$10,599  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McKoy, V. ARC/Cooper, D. M. 13-Physics  
ARC/Stallcop, J. R.

**NAS 8-33108 California Institute of Technology 1358**  
Research in turbomachine rotor forces  
*Period* *Obligations*  
10/23/78-12/31/85 FY85: \$79,936 TOTAL: \$752,427  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Acosta, A. J. MSFC/Garcia, F. F. 46-Mech Engr  
Brennen, C. MSFC/Aderhold, H.  
Caughey, T. K.

**NGL 05-002-003 California Institute of Technology 1365**  
Basic scientific research on lunar and planetary exploration  
*Period* *Obligations*  
12/01/59-11/30/85 FY85: \$150,551 TOTAL: \$4,211,120  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Muhleman, D. O. HQ-EL/Brinton, H. C. 11-Astronomy  
HQ-EL/Bergstrahl, J. T.

**NASW 3752 California Institute of Technology 1359**  
Orbiting dynamic compression laboratory  
*Period* *Obligations*  
03/24/83-10/31/83 FY85: TOTAL: \$25,018  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ahrens, T. J. HQ-MF/Holt, S. S. 41-Aero Engr  
HQ-MF/Pritchard, E. B.

**NGL 05-002-034 California Institute of Technology 1366**  
Research in solar flares and the solar atmosphere  
*Period* *Obligations*  
05/18/65-10/31/85 FY85: \$240,000 TOTAL: \$4,260,066  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Zirin, H. HQ-EZ/Spicer, D. S. 11-Astronomy

**NASW 3983 California Institute of Technology 1360**  
Millimeter spect/radiometer instrument development  
*Period* *Obligations*  
11/15/84-09/30/87 FY85: \$449,944 TOTAL: \$449,944  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Muhleman, D. O. HQ-EL/Vescelus, F. 19-Phys Sci, NEC  
HQ-EL/Quaide, W. L.

**NGL 05-002-105 California Institute of Technology 1367**  
Shock effects in minerals  
*Period* *Obligations*  
08/16/68-03/31/86 FY85: \$206,000 TOTAL: \$2,141,093  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ahrens, T. J. HQ-EL/Boyce, J. M. 32-Geological Sci  
Rust, W. D. HQ-EL/Holt, H. E.  
Sasaki, Y.

**NCA 2-90201 California Institute of Technology 1361**  
Millimeter wavelength observations of galactic and extra galactic astronomical sources  
*Period* *Obligations*  
01/01/82-06/30/84 FY85: \$12 TOTAL: \$7,920  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Neugebauer, G. ARC/Werner, M. W. 11-Astronomy  
Soifer, B. T. ARC/Roellig, T. P.

**NGL 05-002-134 California Institute of Technology 1368**  
Modern astronomical instrument development  
*Period* *Obligations*  
10/27/69-03/31/86 FY85: \$64,994 TOTAL: \$1,069,611  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Oke, J. B. HQ-EZ/Weiler, E. J. 11-Astronomy  
HQ-EZ/Bogges, N. W.

**NCA 2-90401 California Institute of Technology 1362**  
Use of adiabatic demagnetization-cooled detectors for mm-wavelength astronomy  
*Period* *Obligations*  
09/01/84-08/31/85 FY85: TOTAL: \$3,120  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Neugebauer, G. ARC/Werner, M. W. 11-Astronomy  
Soifer, B. T. ARC/Roellig, T. P.

**NGL 05-002-140 California Institute of Technology 1369**  
Research in planetary astronomy  
*Period* *Obligations*  
04/11/69-03/31/86 FY85: \$60,970 TOTAL: \$818,235  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Soifer, B. T. HQ-EL/Brinton, H. C. 11-Astronomy  
HQ-EL/Bergstrahl, J. T.

# **NASA'S UNIVERSITY PROGRAM**

## **CALIFORNIA (Continued)**

**NGL 05-002-338 California Institute of Technology 1370**  
Petrologic and microprobe investigations on isotopically dated lunar samples

<i>Period</i>	<i>Obligations</i>	
02/01/74-01/31/86	FY85: TOTAL: \$622,422	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Albee, A. L.	JSC/Dietrich, J. W.	13-Physics

**NGR 05-002-114 California Institute of Technology 1371**  
Radio interferometry of Mars and Venus

<i>Period</i>	<i>Obligations</i>	
10/11/68-09/30/85	FY85: \$37,665 TOTAL: \$693,445	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Muhleman, D. O.	HQ-EL/Brinton, H. C.	11-Astronomy
	HQ-EL/Hillman, J. J.	

**NGR 05-002-160 California Institute of Technology 1372**  
Research in particles and fields

<i>Period</i>	<i>Obligations</i>	
10/27/69-09/30/85	FY85: \$629,932 TOTAL: \$6,540,252	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stone, E. C.	HQ-EZ/Ormes, J. F.	11-Astronomy
	HQ-EZ/Kaluzienski, L. J.	

**NGT 05-002-801 California Institute of Technology 1373**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
08/15/84-08/14/86	FY85: \$12,000 TOTAL: \$12,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Caughy, T. K.	HQ-LB/Owens, F. C.	46-Mech Engr

**NGT 05-002-802 California Institute of Technology 1374**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/85-05/31/86	FY85: \$15,500 TOTAL: \$15,500	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Phillips, T. G.	HQ-LE/Owens, F. C.	13-Physics

**NGT 05-003-790 California Institute of Technology 1375**  
Summer research program faculty fellowships

<i>Period</i>	<i>Obligations</i>	
01/01/79-03/31/86	FY85: \$254,915 TOTAL: \$1,399,086	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Albee, A. L.	HQ-LB/Owens, F. C.	49-Engr, NEC

**NSG 1483 California Institute of Technology 1376**  
Low speed impact damage on composite materials

<i>Period</i>	<i>Obligations</i>	
01/15/78-01/14/86	FY85: \$62,950 TOTAL: \$385,022	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Knauss, W. G.	LARC/Starns, J. H., Jr.	41-Aero Engr
Babcock, C. D.		

**NSG 7129 California Institute of Technology 1377**  
Relationship of impact cratering to the evolution of the lunar surface

<i>Period</i>	<i>Obligations</i>	
04/01/75-12/31/85	FY85: \$83,716 TOTAL: \$678,071	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ahrens, T. J.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NSG 7202 California Institute of Technology 1378**  
Laboratory partitioning studies relevant to the interpretation of lunar and meteoritic trace element data

<i>Period</i>	<i>Obligations</i>	
02/01/76-01/31/85	FY85: TOTAL: \$678,600	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Burnett, D. S.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/French, B. M.	

**NSG 7376 California Institute of Technology 1379**  
Photochemistry of the Jovian planets and their satellites

<i>Period</i>	<i>Obligations</i>	
11/01/77-10/31/86	FY85: \$65,000 TOTAL: \$400,172	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yung, Y. L.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Quaide, W. L.	

**NSG 7610 California Institute of Technology 1380**  
Fundamental studies in geodynamics

<i>Period</i>	<i>Obligations</i>	
08/01/79-07/31/84	FY85: TOTAL: \$685,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Anderson, D. L.	HQ-EL/Tuyahov, A. J.	32-Geological Sci
Hager, B. H.		
Kanamori, H.		

**NAG 8-49 California Polytechnic State U - Pomona 1381**  
Development of a small-scale V/STOL propulsion simulator for modelling ground effect fields

<i>Period</i>	<i>Obligations</i>	
08/01/80-06/30/86	FY85: \$14,363 TOTAL: \$112,183	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lord, P. A.	ARC/Christianson, R. S.	41-Aero Engr
	ARC/Koenig, D. G.	

**NAGW 715 California Polytechnic State U - Pomona 1382**  
Periglacial and glacial analogs for Martian landforms

<i>Period</i>	<i>Obligations</i>	
01/01/85-12/31/85	FY85: \$13,324 TOTAL: \$13,324	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rosbacher, L. A.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAG 2-61 California Polytechnic State U-San Luis 1383**  
Experimental investigation of control concepts for buoyant hybrid airships using a small scale flying model

<i>Period</i>	<i>Obligations</i>	
08/29/80-01/31/86	FY85: TOTAL: \$52,205	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sandlin, D. R.	ARC/Talbot, P. D.	41-Aero Engr

**NAS 2-10364 California Polytechnic State U-San Luis 1384**  
Software development and application for dynamic analysis of the tilt rotor research aircraft

<i>Period</i>	<i>Obligations</i>	
09/04/79-09/01/86	FY85: TOTAL: \$370,302	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Grimes, J. E.	ARC/Magee, J. P.	41-Aero Engr

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NCA 2-6 California Polytechnic State U-San Luis 1385**  
 Correlation of predicted behavior with loads test results for the HiMAT, aeroelastical tailored outer wing

Period	Obligations	
01/01/85-10/31/85	FY85: \$26,015	TOTAL: \$26,015
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nelson, L. H.	ARC/Carter, A.	41-Aero Engr

**NCC 2-338 California Polytechnic State U-San Luis 1392**  
 Investigation of the applicability of state of the art flying qualities to advanced aircraft

Period	Obligations	
10/01/84-10/31/85	FY85: \$20,000	TOTAL: \$20,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sandlin, D. R.	ARC/Berry, D. T.	41-Aero Engr

**NCC 2-226 California Polytechnic State U-San Luis 1386**  
 Validation of an existing panelling method

Period	Obligations	
10/01/82-10/31/85	FY85: \$20,000	TOTAL: \$59,957
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sandlin, D. R.	ARC/Corsiglia, V. R.	41-Aero Engr

**NSG 2391 California Polytechnic State U-San Luis 1393**  
 Delay of separation with free stream turbulence

Period	Obligations	
08/01/79-03/31/86	FY85: \$21,412	TOTAL: \$156,612
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hoffmann, J. A.	ARC/Koenig, D. G.	41-Aero Engr
	ARC/Aoyagi, K.	

**NCC 2-236 California Polytechnic State U-San Luis 1387**  
 Use of the ACSYNT program for the preliminary investigation of selected aircraft

Period	Obligations	
01/01/83-12/31/86	FY85: \$20,000	TOTAL: \$56,907
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sandlin, D. R.	ARC/Wilson, S. B.	41-Aero Engr

**NAS 3-22172 California State University - Chico 1394**  
 Operation of the LERC visitor information center

Period	Obligations	
10/01/79-10/31/85	FY85: \$581,924	TOTAL: \$2,225,314
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lewis, M. R.	LERC/Bondurant, L.	99-Multi-Discip

**NCC 2-255 California Polytechnic State U-San Luis 1388**  
 The use of powered lift on swept forward wings

Period	Obligations	
07/01/83-03/31/85	FY85:	TOTAL: \$31,444
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sandlin, D. R.	ARC/Koenig, D. G.	41-Aero Engr
Scheib, J.		

**NCA 2-251301 California State University - Fresno 1395**  
 Design of fault-tolerant systems using performance monitors

Period	Obligations	
09/01/83-06/30/84	FY85:	TOTAL: \$28,042
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Heaney, A. A.	ARC/Lim, R. S.	22-Computer Science

**NCC 2-258 California Polytechnic State U-San Luis 1389**  
 Selection of a prediction program to predict fixed wing flight conditions for the RSRA

Period	Obligations	
07/01/83-03/31/85	FY85:	TOTAL: \$32,675
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sandlin, D. R.	ARC/Snyder, W. J.	41-Aero Engr
	ARC/Erickson, R.	

**NAG 9-57 California State University - Fullerton 1396**  
 Meteoritic trace element microdistributions

Period	Obligations	
03/01/83-03/01/86	FY85: \$54,000	TOTAL: \$145,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Woolum, D. S.	JSC/Browne, I. D.	13-Physics

**NCC 2-259 California Polytechnic State U-San Luis 1390**  
 Wing downloads generated by rotor wash in hover

Period	Obligations	
07/01/83-07/31/85	FY85:	TOTAL: \$33,299
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sandlin, D. R.	ARC/Schroers, L. G.	41-Aero Engr
Jordan, D.	ARC/Maisel, M. D.	

**NSG 7614 California State University - Fullerton 1397**  
 Atmospheric dynamics from Viking Lander data

Period	Obligations	
08/01/79-04/30/86	FY85:	TOTAL: \$106,739
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ryan, J. A.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NCC 2-278 California Polytechnic State U-San Luis 1391**  
 Aerodynamic instrumentation for the 40 x 80 x 120 integrated systems test

Period	Obligations	
02/01/84-07/31/85	FY85: \$7,600	TOTAL: \$31,738
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sandlin, D. R.	ARC/Falarski, M. D.	41-Aero Engr
Hoffmann, J. A.	ARC/Kirk, J. V.	
Zell, P. T.		

**NCC 2-223 California State Univ. - Hayward 1398**  
 Limits of dual response generation in flight control

Period	Obligations	
12/01/82-12/31/85	FY85: \$24,375	TOTAL: \$109,159
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Klapp, S. T.	ARC/Hartzell, E. J.	69-Psych, NEC

**NCC 2-318 California State Univ. - Hayward 1399**  
 Perception and performance in altered gravitational inertial field

Period	Obligations	
07/01/84-12/31/85	FY85: \$40,980	TOTAL: \$55,980
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stoper, A. E.	ARC/Cohen, M. M.	69-Psych, NEC

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NAG 2-287 California State University - Long Beach 1400**  
Numerical and physical aspects of aerodynamic flows  
*Period Obligations*  
03/01/84-03/31/85 FY85: TOTAL: \$9,980  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cabeci, T. ARC/Peterson, V. L. 41-Aero Engr

**NAG 3-20 California State University - Long Beach 1401**  
Gear lubrication and cooling study  
*Period Obligations*  
01/01/80-11/14/85 FY85: \$55,007 TOTAL: \$262,232  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Akin, L. LERC/Townsend, D. P. 46-Mech Engr  
Unt, H.

**NAG 3-601 California State University - Long Beach 1402**  
Iced airfoil flowfield analysis  
*Period Obligations*  
01/05/85-01/04/86 FY85: \$39,903 TOTAL: \$39,903  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cebeci, T. LERC/Shaw, R. J. 41-Aero Engr

**NAG 2-255 California State University - Northridge 1403**  
Space station habitability  
*Period Obligations*  
08/01/83-09/30/84 FY85: TOTAL: \$233,538  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Bluth, B. J. ARC/Tanner, T. A. 79-Soc Sci, NEC

**NAGW 548 California State University - Northridge 1404**  
Full disk grotometer in support of SMM  
*Period Obligations*  
03/01/84-11/30/84 FY85: TOTAL: \$19,941  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Chapman, G. A. HQ-EZ/Thomas, R. J. 13-Physics

**NAGW 659 California State University - Northridge 1405**  
Space station human productivity  
*Period Obligations*  
10/01/84-09/31/85 FY85: \$174,812 TOTAL: \$198,608  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Bluth, B. J. HQ-S/Cramer, D. B. 56-Medical Sciences

**NAGW 688 California State University - Northridge 1406**  
Operation of a rotating full disk photometer in support of the SMM  
*Period Obligations*  
12/01/84-11/30/85 FY85: \$27,000 TOTAL: \$27,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Chapman, G. A. HQ-EZ/Spicer, D. S. 13-Physics

**NCA 2-554301 California State University - Northridge 1407**  
Analog simulation of flux summing servo model  
*Period Obligations*  
12/01/82-09/30/84 FY85: TOTAL: \$45,682  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hriber, E. J. ARC/Shih, K. C. 41-Aero Engr  
ARC/Brockner, D. H.

**NCC 2-310 California State University - Sacramento 1408**  
Teams in space: In depth study of teams, team building and team performance  
*Period Obligations*  
07/01/84-12/31/85 FY85: \$73,465 TOTAL: \$136,365  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Sparks, P. M. ARC/Tanner, T. A. 79-Soc Sci, NEC  
Liberty, L.

**NCC 2-31 De Anza College 1409**  
Optimization of an interactive distributive computer network for planetary and infrared scientific research applications  
*Period Obligations*  
10/01/79-01/31/85 FY85: TOTAL: \$237,048  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Frederick, V. ARC/Lum, H. 49-Engr, NEC

**NCC 2-342 Foothill-De Anza Com College System Off 1410**  
Optimization of knowledge based systems and expert system development tools  
*Period Obligations*  
01/01/85-06/30/86 FY85: \$185,929 TOTAL: \$185,929  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Frederick, V. ARC/Lum, H. 22-Computer Science

**NAG 2-240 Harvey Mudd College 1411**  
Dynamic analysis of aircraft structures  
*Period Obligations*  
06/20/83-06/19/84 FY85: TOTAL: \$61,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Tanenbaum, B. S. ARC/Gupta, K. K. 41-Aero Engr  
ARC/Knight, R. J.

**NAG 2-285 Harvey Mudd College 1412**  
Development and analysis of methods for the graphic display of maneuvering aircraft trajectories  
*Period Obligations*  
10/01/83-06/30/84 FY85: TOTAL: \$22,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Busenberg, S. N. ARC/Ardema, M. D. 22-Computer Science

**NCA 2-283201 Harvey Mudd College 1413**  
Development of low-cost simulation technology for high resolution radar displays  
*Period Obligations*  
09/01/82-08/31/84 FY85: TOTAL: \$57,377  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Phillips, J. R. ARC/Clary, G. R. 41-Aero Engr

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NCA 2-283301 Harvey Mudd College 1414**  
Adaptation of the Harvey Mudd College MATHLIB software for Ames applications

<i>Period</i>	<i>Obligations</i>	
11/01/82-10/31/84	FY85:	TOTAL: \$14,849
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Borrelli, R. L.	ARC/Clary, G. R.	22-Computer Science

**NCA 2-283303 Harvey Mudd College 1415**  
Development of numerical finite element techniques for dynamic analysis of spinning structures

<i>Period</i>	<i>Obligations</i>	
06/01/83-05/31/84	FY85:	TOTAL: \$40,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tanenbaum, B. S.	ARC/Gupta, K. K.	22-Computer Science

**NCA 2-283304 Harvey Mudd College 1416**  
Investigation of seismicity and related effects at construction sites at NASA Dryden Flight Research Facility

<i>Period</i>	<i>Obligations</i>	
08/25/83-05/15/84	FY85:	TOTAL: \$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tanenbaum, B. S.	DFRF/Anderson, K. F.	32-Geological Sci

**NCA 2-283402 Harvey Mudd College 1417**  
Dynamic analysis of FSW (X-29A) aircraft components

<i>Period</i>	<i>Obligations</i>	
10/24/83-06/01/84	FY85:	TOTAL: \$14,911
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tanenbaum, B. S.	DFRF/Gupta, K. K.	41-Aero Engr

**NCA 2-283403 Harvey Mudd College 1418**  
Development of ELXSI versions of STARS and FASTEX computer programs

<i>Period</i>	<i>Obligations</i>	
05/01/84-04/30/85	FY85:	TOTAL: \$30,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tanenbaum, B. S.	ARC/Gupta, K. K.	22-Computer Science

**NCA 2-283404 Harvey Mudd College 1419**  
A systems simulation study of the proposed large deployable reflector

<i>Period</i>	<i>Obligations</i>	
09/01/84-07/15/85	FY85:	TOTAL: \$25,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tanenbaum, B. S.	ARC/Gupta, K. K.	46-Mech Engr
	ARC/Pittman, R. B.	

**NCA 2-283501 Harvey Mudd College 1420**  
Flutter and vibration analysis of X-29A aircraft

<i>Period</i>	<i>Obligations</i>	
10/15/84-04/14/86	FY85:	TOTAL: \$55,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tanenbaum, B. S.	ARC/Gupta, K. K.	41-Aero Engr

**NCC 2-314 Harvey Mudd College 1421**  
Free vibration and dynamic response analysis of spinning structures

<i>Period</i>	<i>Obligations</i>	
08/01/84-12/31/85	FY85: \$6,000	TOTAL: \$29,070
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tanenbaum, B. S.	ARC/Gupta, K. K.	41-Aero Engr
	ARC/Knight, R. J.	

**NCC 2-343 Harvey Mudd College 1422**  
Structural dynamics analysis of oblique wing aircraft

<i>Period</i>	<i>Obligations</i>	
03/01/85-02/28/86	FY85: \$125,000	TOTAL: \$125,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tanenbaum, B. S.	ARC/Gupta, K. K.	41-Aero Engr
	ARC/Knight, R. J.	

**NCA 2-51 Humboldt State University 1423**  
Automated assistance for data communications class of service and tariff analysis

<i>Period</i>	<i>Obligations</i>	
06/01/85-12/31/85	FY85: \$10,780	TOTAL: \$10,780
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Blaisdell, J. H.	ARC/Jones, W. P.	22-Computer Science

**NCA 2-55 Humboldt State University 1424**  
An investigation into the feasibility of non subsidized commercial space manufacturing by the year 2000

<i>Period</i>	<i>Obligations</i>	
06/15/85-09/30/85	FY85: \$1,887	TOTAL: \$1,887
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Blaisdell, J. H.	ARC/Milov, L. A.	22-Computer Science

**NGT 05-078-800 Loma Linda University 1425**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/83-05/31/86	FY85: \$18,000	TOTAL: \$48,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Phillips, T. G.	HQ-LB/Owens, F. C.	51-Biological Sci

**NAG 5-463 San Diego State University 1426**  
Low and high resolution spectra during the rise to maximum light

<i>Period</i>	<i>Obligations</i>	
08/15/84-02/14/86	FY85:	TOTAL: \$4,707
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dawson, D. W.	GSFC/Kondo, Y.	11-Astronomy
Dupuy, D. L.		

**NAGW 184 San Diego State University 1427**  
Calculate transmission of CO2 in the atmosphere of Venus

<i>Period</i>	<i>Obligations</i>	
05/01/81-10/31/84	FY85:	TOTAL: \$94,540
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Young, L.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NASA'S UNIVERSITY PROGRAM  
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**NAGW 230 San Diego State University 1428**  
Mechanism of geotropic curvature in plant shoots  
*Period Obligations*  
07/01/81-09/30/85 FY85: \$49,542 TOTAL: \$177,916  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Rayle, D. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAGW 250 San Diego State University 1429**  
Sulfur in the clouds of Venus  
*Period Obligations*  
10/01/81-03/31/86 FY85: \$40,000 TOTAL: \$146,777  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Young, A. T. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Quaide, W. L.

**NAGW 319 San Diego State University 1430**  
Photoabsorption and photodissociation of molecules important  
in the interstellar medium  
*Period Obligations*  
05/15/82-05/14/86 FY85: \$60,340 TOTAL: \$264,694  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Lee, L. HQ-EZ/Stencel, R. E. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NAGW 661 San Diego State University 1431**  
Measurements of HO<sub>2</sub> chemical kinetics with a new detection  
method  
*Period Obligations*  
12/01/84-11/30/85 FY85: \$98,810 TOTAL: \$98,810  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Lee, L. C. HQ-EE/Hampson, R. F. 31-Atmos Sci  
Suto, M. HQ-EE/Demore, W. B.

**NCA 2-4 San Diego State University 1432**  
Improvements in stellar photometry  
*Period Obligations*  
01/01/85-12/31/86 FY85: \$40,000 TOTAL: \$40,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Young, A. T. ARC/Worucki, W. J. 11-Astronomy

**NCC 2-300 San Diego State University 1433**  
Astronomical conference improvement in photometry  
*Period Obligations*  
06/01/84-08/31/84 FY85: TOTAL: \$10,119  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Young, A. T. ARC/Borucki, W. J. 11-Astronomy  
Angione, R. J.

**NAGW 324 San Francisco State University 1434**  
Soluble minerals as prebiotic surfaces for absorption and  
condensation of biomolecules  
*Period Obligations*  
05/01/82-11/30/85 FY85: \$86,000 TOTAL: \$297,118  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Orenberg, J. B. HQ-EB/Devincenzi, D. L. 12-Chemistry  
Lahav, N. HQ-EB/Rambler, M. B.

**NCA 2-2 San Francisco State University 1435**  
Comparative study of modern and Precambrian stromatolites  
*Period Obligations*  
01/17/85-01/17/86 FY85: \$40,000 TOTAL: \$40,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wharton, R. A. ARC/Kasting, J. F. 39-Env Sci, NEC  
ARC/Pollack, J. B.

**NCA 2-44 San Francisco State University 1436**  
Studies of the radiative properties of the Earth's atmosphere  
*Period Obligations*  
06/17/85-06/16/86 FY85: \$29,348 TOTAL: \$29,348  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Marcy, G. W. ARC/Valero, F. P. 11-Astronomy

**NCA 2-660302 San Francisco State University 1437**  
Carbon and nitrogen biogeochemistry in the ocean: A study  
using stable isotope natural abundance  
*Period Obligations*  
08/01/83-07/31/84 FY85: TOTAL: \$40,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Rau, G. H. ARC/Des Marais, D. J. 59-Life Sci, NEC

**NCA 2-660401 San Francisco State University 1438**  
Joint use of resources for operation of the NASA Ames university  
consortium office  
*Period Obligations*  
11/01/83-10/31/84 FY85: TOTAL: \$118,478  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Eisenberg, L. ARC/Tomberlin, K. A. 99-Multi-Discip  
Heidtmann, R. W.

**NCA 2-660402 San Francisco State University 1439**  
Trophic relationships among ocean particulates  
*Period Obligations*  
01/01/84-01/01/85 FY85: TOTAL: \$5,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Rau, G. H. ARC/Lawless, J. G. 54-Env Biology

**NCA 2-660403 San Francisco State University 1440**  
Carbon and nitrogen dynamics in the N. E. Pacific ocean: Stable  
isotope measurements of vertex IV samples  
*Period Obligations*  
08/01/84-07/31/85 FY85: \$18,000 TOTAL: \$25,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Rau, G. H. ARC/Des Marais, D. J. 54-Env Biology

**NCA 2-660501 San Francisco State University 1441**  
Joint use of resources for operation of the NASA Ames university  
consortium office  
*Period Obligations*  
11/01/84-10/31/85 FY85: \$93,693 TOTAL: \$272,364  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Eisenberg, L. ARC/Tomberlin, K. A. 99-Multi-Discip  
Giles, E. C.

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**NCC 2-214 San Francisco State University 1442**  
Origin and prevalence of life in the universe  
*Period Obligations*  
10/01/82-01/31/85 FY85: \$48,958 TOTAL: \$593,592  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Seeger, C. L. ARC/Billingnam, J. 59-Life Sci, NEC  
ARC/Wolfe, J. H.

**NAGW 566 San Jose State University 1449**  
Microbes and the global sulfur cycle  
*Period Obligations*  
03/01/84-03/31/85 FY85: TOTAL: \$110,111  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Weaver, E. C. HQ-EB/De Vincenzi, D. L.  
51-Biological Sci  
HQ-EB/Rambler, M. B.

**NCC 2-321 San Francisco State University 1443**  
Biologically produced volatile compounds: N<sub>2</sub>O emissions from soil  
*Period Obligations*  
09/01/84-10/31/85 FY85: \$40,000 TOTAL: \$40,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Banin, A. ARC/Lawless, J. G. 54-Env Biology

**NCA 2-59 San Jose State University 1450**  
Research problems in space and planetary biology biotechnology life support and the origin of life  
*Period Obligations*  
06/15/85-06/14/87 FY85: \$21,050 TOTAL: \$21,050  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Holley, D. C. ARC/Jahnke, L. L. 51-Biological Sci

**NCC 2-352 San Francisco State University 1444**  
The spectroscopic chemical and photophysical properties of Martian soils and their analogs  
*Period Obligations*  
04/01/85-11/15/85 FY85: \$70,000 TOTAL: \$70,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Banin, A. ARC/Carle, G. C. 59-Life Sci, NEC  
Orenberg, J.

**NCA 2-675201 San Jose State University 1451**  
Preliminary structural design analysis of high aspect ratio wings for transport aircraft  
*Period Obligations*  
10/01/81-10/31/83 FY85: TOTAL: \$66,945  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wang, J. C. ARC/Miura, H. 41-Aero Engr

**NAG 2-99 San Jose State University 1445**  
External thermal protection coating systems  
*Period Obligations*  
10/01/80-12/31/84 FY85: TOTAL: \$138,268  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Mayer, L. A. ARC/Gilwee, W. J. 49-Engr, NEC  
ARC/Kourtides, D. A.

**NCA 2-675202 San Jose State University 1452**  
Studies on a blue-green alga capable of anoxygenic photosynthesis  
*Period Obligations*  
01/25/82-06/01/84 FY85: TOTAL: \$46,088  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Weaver, E. C. ARC/Klein, H. P. 51-Biological Sci  
ARC/Lawless, J. G.

**NAG 2-215 San Jose State University 1446**  
Microprocessor controlled adaptive filters  
*Period Obligations*  
12/01/82-01/31/86 FY85: TOTAL: \$15,483  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Strasilla, U. ARC/Deboo, G. J. 22-Computer Science

**NCA 2-675303 San Jose State University 1453**  
Research problems in space and planetary biology, biotechnology, life support, and the origin of life  
*Period Obligations*  
06/15/83-06/14/85 FY85: \$8,826 TOTAL: \$38,480  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Holley, D. C. ARC/Jahnke, L. L. 59-Life Sci, NEC

**NAG 2-280 San Jose State University 1447**  
Surface acoustic wave integrated circuits  
*Period Obligations*  
03/01/84-12/31/85 FY85: TOTAL: \$20,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Yuen, C. ARC/Deboo, G. J. 45-Elec Engr

**NCA 2-675304 San Jose State University 1454**  
Carbon fiber surface modification and characterization  
*Period Obligations*  
04/01/83-09/30/84 FY85: TOTAL: \$21,302  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kellman, R. ARC/Gilwee, W. J. 12-Chemistry

**NAG 2-363 San Jose State University 1448**  
AOTV shock tunnel simulations  
*Period Obligations*  
10/01/85-11/30/85 FY85: \$8,000 TOTAL: \$8,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Desautel, D. ARC/Davy, W. C. 41-Aero Engr

**NCA 2-675306 San Jose State University 1455**  
Application of structure optimization capabilities to airframe designs problems  
*Period Obligations*  
09/01/83-11/30/84 FY85: TOTAL: \$44,982  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wang, J. C. ARC/Miura, H. 41-Aero Engr



# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NCA 2-675401** **San Jose State University** **1456**  
AOTV shock tunnel simulations report science activities  
*Period* *Obligations*  
10/01/83-10/31/85 FY85: \$33,272 TOTAL: \$65,486  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Desautel, R. ARC/Park, C. 41-Aero Engr

**NCA 2-675402** **San Jose State University** **1457**  
Investigation of low latitude sedimentary deposits on Mars  
*Period* *Obligations*  
03/01/84-10/31/85 FY85: \$17,357 TOTAL: \$25,357  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Andersen, D. W. ARC/Squyres, S. W. 32-Geological Sci

**NCA 2-675404** **San Jose State University** **1458**  
Foliar chemical characteristics in water limited ecosystems  
*Period* *Obligations*  
05/01/84-04/30/86 FY85: \$45,000 TOTAL: \$69,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Savage, W. ARC/Matson, P. A. 55-Agriculture Sci

**NCC 2-3** **San Jose State University** **1459**  
A study of fiber materials for use in temperature resistant fiber reinforced composites  
*Period* *Obligations*  
05/31/79-05/31/86 FY85: \$70,000 TOTAL: \$340,342  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Anderson, R. N. ARC/Riccitiello, S. R. 47-Materials Engr

**NCC 2-34** **San Jose State University** **1460**  
Cooperative research on flight management  
*Period* *Obligations*  
10/01/79-09/30/85 FY85: TOTAL: \$576,267  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Plant, W. T. ARC/Hart, S. G. 59-Life Sci, NEC

**NCC 2-35** **San Jose State University** **1461**  
Simulation technology: Human performance in flight simulation abstract  
*Period* *Obligations*  
10/01/79-06/30/86 FY85: TOTAL: \$337,618  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Plant, W. T. ARC/Stewart, J. D. 69-Psych, NEC

**NCC 2-37** **San Jose State University** **1462**  
Helicopter human factors  
*Period* *Obligations*  
10/01/79-09/30/84 FY85: TOTAL: \$344,119  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Plant, W. T. ARC/Hartzell, E. J. 69-Psych, NEC

**NCC 2-56** **San Jose State University** **1463**  
Heat release studies for aircraft materials  
*Period* *Obligations*  
01/01/80-03/31/85 FY85: \$2,200 TOTAL: \$278,657  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ling, A. C. ARC/Kourtides, D. A. 12-Chemistry  
ARC/Gilwee, W. J.

**NCC 2-68** **San Jose State University** **1464**  
One and two-dimensional atmospheric computer model and studies  
*Period* *Obligations*  
04/01/80-05/31/84 FY85: TOTAL: \$273,456  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goodman, J. ARC/Toon, O. B. 31-Atmos Sci  
ARC/Danielson, E. F.

**NCC 2-73** **San Jose State University** **1465**  
A method for evaluating the transports by mean deviatory motions in a two-dimensional model  
*Period* *Obligations*  
05/01/80-12/14/84 FY85: \$17,255 TOTAL: \$184,548  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goodman, J. ARC/Danielson, E. F. 31-Atmos Sci  
ARC/Summers, A. L.

**NCC 2-83** **San Jose State University** **1466**  
Determination, state estimation and parameter identification  
*Period* *Obligations*  
06/01/80-03/31/84 FY85: TOTAL: \$353,826  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wang, J. C. ARC/Jinkerson, J. H. 41-Aero Engr  
Demiroz, M. Y. ARC/Shoekey, G. A.  
Yoshida, K.

**NCC 2-153** **San Jose State University** **1467**  
Energetic contributions of the mineral phase to chemistry on planetary surfaces  
*Period* *Obligations*  
07/01/81-10/31/85 FY85: \$72,500 TOTAL: \$312,288  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ling, A. C. ARC/Chang, S. 12-Chemistry  
Coyne, L. M. ARC/Lawless, J. G.

**NCC 2-155** **San Jose State University** **1468**  
The relative stress corrosion cracking susceptibility of candidate aluminum-lithium alloys  
*Period* *Obligations*  
08/24/81-09/30/85 FY85: TOTAL: \$204,785  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pizzo, P. P. ARC/Nelson, H. G. 47-Materials Engr

**NCC 2-167** **San Jose State University** **1469**  
Functional significance of sensory interactions in the vestibular system in relation to self motion perception and motion sickness  
*Period* *Obligations*  
01/01/82-12/31/85 FY85: \$76,997 TOTAL: \$211,796  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fox, R. A. ARC/Daunton, N. G. 51-Biological Sci  
ARC/Corcoran, M. L.

**NCC 2-168** **San Jose State University** **1470**  
Experimental studies of the distribution of minor constituents  
*Period* *Obligations*  
01/01/82-12/31/85 FY85: \$73,434 TOTAL: \$205,020  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goodman, J. ARC/Vedder, J. F. 31-Atmos Sci

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**NCC 2-195 San Jose State University 1471**  
Development of analytical techniques for the analysis of fiber materials  
*Period Obligations*  
08/01/82-05/31/86 FY85: \$55,763 TOTAL: \$138,678  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Anderson, R. N. ARC/Ricciello, S. R. 47-Materials Engr  
ARC/Leiser, D.

**NCC 2-256 San Jose State University 1478**  
The study of the effects of fire environments on propellant structures  
*Period Obligations*  
06/01/83-03/31/84 FY85: TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Holmstrom, F. ARC/Mansfield, J. A. 49-Engr, NEC

**NCC 2-197 San Jose State University 1472**  
Circadian rhythms: Physiological adjustment and performance in simulation studies  
*Period Obligations*  
06/01/82-01/31/86 FY85: \$34,942 TOTAL: \$157,933  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Holley, D. C. ARC/Deroshia, C. W. 51-Biological Sci  
ARC/Winget, C. M.

**NCC 2-261 San Jose State University 1479**  
The use of superoxide mixture as air revitalization chemicals in hyperbaric self-contained, closed-circuit breathing apparatus  
*Period Obligations*  
08/01/83-08/31/84 FY85: TOTAL: \$20,774  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Spitze, L. A. ARC/Wydeven, T. J. 12-Chemistry  
Wood, P.

**NCC 2-207 San Jose State University 1473**  
Mechanisms by which hypergravitational exposure influences hormonal and enzymatic regulation of carbohydrate metabolism  
*Period Obligations*  
06/01/82-08/31/85 FY85: TOTAL: \$47,838  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Holley, D. C. ARC/Oyama, J. 51-Biological Sci

**NCC 2-267 San Jose State University 1480**  
Development of digital flight control laws and a flight control computer system for RSRA rotor performance research  
*Period Obligations*  
08/22/83-12/31/85 FY85: \$121,876 TOTAL: \$424,569  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wang, J. C. ARC/Talbot, P. D. 41-Aero Engr  
ARC/Snyder, W.

**NCC 2-211 San Jose State University 1474**  
Tropospheric stratospheric measurement studies  
*Period Obligations*  
09/22/82-10/31/85 FY85: \$69,366 TOTAL: \$185,583  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Goodman, J. ARC/Chan, K. R. 31-Atmos Sci  
Bowen, S. W. ARC/Scott, S. G.

**NCC 2-282 San Jose State University 1481**  
Histophysiological aspects of the area postrema in normal and motion emetic susceptible animals  
*Period Obligations*  
12/01/83-11/30/85 FY85: \$63,522 TOTAL: \$126,588  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Savage, W. ARC/Mehler, W. R. 51-Biological Sci  
D'amelio, F. ARC/Daunton, N. G.

**NCC 2-216 San Jose State University 1475**  
Numerical approximations modeling for preliminary aircraft design  
*Period Obligations*  
10/01/82-09/30/85 FY85: \$40,000 TOTAL: \$106,551  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Huynh, L. C. ARC/Bowles, J. V. 29-Math/Computer, NEC  
Wang, J. C. ARC/Galloway, T. L.

**NCC 2-299 San Jose State University 1482**  
Thermal trade-off analysis associated with SIRT  
*Period Obligations*  
04/01/84-12/31/85 FY85: \$15,700 TOTAL: \$20,700  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Holmstrom, F. ARC/Mansfield, J. A. 49-Engr, NEC  
ARC/Brooks, W. F.

**NCC 2-227 San Jose State University 1476**  
Studies of histological and ultrastructural changes in the mammalian brain following HZE irradiation  
*Period Obligations*  
01/01/83-09/30/85 FY85: \$15,000 TOTAL: \$159,124  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Savage, W. ARC/Kraft, L. M. 51-Biological Sci

**NCC 2-315 San Jose State University 1483**  
An investigation of clear air turbulence (CAT) incidents involving wide-bodied aircraft  
*Period Obligations*  
06/15/84-10/14/85 FY85: \$17,471 TOTAL: \$22,471  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Lester, P. F. ARC/Wingrove, R. C. 31-Atmos Sci

**NCC 2-246 San Jose State University 1477**  
Steam regeneration of a solid amine CO2 absorbent  
*Period Obligations*  
05/01/83-02/28/86 FY85: \$96,707 TOTAL: \$180,042  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Shitze, L. A. ARC/Wydeven, T. J. 12-Chemistry  
Wood, P. C.

**NCC 2-327 San Jose State University 1484**  
Aero-space human factors  
*Period Obligations*  
10/01/84-10/31/85 FY85: \$328,702 TOTAL: \$328,702  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Plant, W. T. ARC/Nagel, D. C. 69-Psych, NEC  
Jordan, K. ARC/Chambers, A. B.

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NCC 2-345**                      **San Jose State University**                      **1485**  
The spectroscopic, chemical and photophysical properties of  
Martian soils and their analogs

<i>Period</i>	<i>Obligations</i>	
03/01/85-11/15/85	FY85: \$42,250	TOTAL: \$42,250
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ling, A. C.	ARC/Carle, G. C.	59-Life Sci, NEC
Coyne, L. M.		

**NGT 05-022-800**                      **San Jose State University**                      **1486**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
05/01/84-06/30/85	FY85:	TOTAL: \$14,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Freeman, J.	HQ-LB/Owens, F. C.	45-Elec Engr

**NCC 2-356**                      **So. Cal Institute of Architecture**                      **1487**  
Space station group activities habitability module study

<i>Period</i>	<i>Obligations</i>	
06/01/85-10/31/85	FY85: \$7,500	TOTAL: \$7,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nixon, D. A.	ARC/Cohen, M. M.	79-Soc Sci, NEC

**NAG 1-182**                      **Stanford University**                      **1488**  
High energy efficient solid state laser sources

<i>Period</i>	<i>Obligations</i>	
06/01/81-10/31/85	FY85: \$125,000	TOTAL: \$333,582
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Byer, R. L.	LARC/Magee, C. J.	45-Elec Engr
	LARC/Newcomb, A. L.	

**NAG 1-322**                      **Stanford University**                      **1489**  
Precise control of flexible manipulators

<i>Period</i>	<i>Obligations</i>	
03/24/83-06/30/84	FY85:	TOTAL: \$171,062
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cannon, R. H., Jr.	LARC/Barker, L. K.	46-Mech Engr
Binford, T. O.	LARC/Pennington, J. E.	

**NAG 1-361**                      **Stanford University**                      **1490**  
An element-by-element solution algorithm for problems of  
computational fluid dynamics

<i>Period</i>	<i>Obligations</i>	
05/01/83-04/30/86	FY85: \$69,542	TOTAL: \$193,982
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hughes, T. J.	LARC/Olsen, G. C.	29-Math/Computer, NEC

**NAG 1-402**                      **Stanford University**                      **1491**  
An analysis of wave interactions in swept-wing flows

<i>Period</i>	<i>Obligations</i>	
10/01/83-01/31/86	FY85: \$50,000	TOTAL: \$100,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Johnston, J. P.	LARC/Maddalon, D. V.	41-Aero Engr
	LARC/Wagner, R. D.	

**NAG 1-532**                      **Stanford University**                      **1492**  
Simulations of turbulent mixing and reacting flows and their  
application to turbulence modeling

<i>Period</i>	<i>Obligations</i>	
11/05/84-11/04/85	FY85: \$90,000	TOTAL: \$90,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ferziger, J. H.	LARC/Drummond, J. P.	46-Mech Engr
Cantwell, B. J.	LARC/Zang, T. A.	

**NAG 2-83**                      **Stanford University**                      **1493**  
Application of modern coherent and Fourier optical techniques  
to fluid mechanics research

<i>Period</i>	<i>Obligations</i>	
01/01/81-12/31/84	FY85:	TOTAL: \$102,687
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hesselink, L.	ARC/McKenzie, R. L.	19-Phys Sci, NEC
Partridge, H.		

**NAG 2-130**                      **Stanford University**                      **1494**  
Noninvasive determination of bone properties from mechanical  
measurement

<i>Period</i>	<i>Obligations</i>	
10/01/81-09/30/85	FY85: \$30,312	TOTAL: \$114,312
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Steele, C. R.	ARC/Young, D. R.	56-Medical Sciences

**NAG 2-173**                      **Stanford University**                      **1495**  
Circulation control aerodynamics

<i>Period</i>	<i>Obligations</i>	
01/01/82-10/31/85	FY85: \$102,650	TOTAL: \$339,541
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roberts, L.	ARC/Keener, E. R.	41-Aero Engr
Wood, N. J.	ARC/Davis, J. J.	

**NAG 2-191**                      **Stanford University**                      **1496**  
Modeling and control of V/STOL aircraft

<i>Period</i>	<i>Obligations</i>	
08/15/82-12/31/85	FY85: \$50,000	TOTAL: \$200,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bryson, A. E.	ARC/Erzberger, H.	41-Aero Engr
	ARC/Denery, D.	

**NAG 2-223**                      **Stanford University**                      **1497**  
Control system design based on reduced order models

<i>Period</i>	<i>Obligations</i>	
01/01/83-12/31/85	FY85: \$45,464	TOTAL: \$121,240
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Franklin, G. F.	ARC/Petersen, K. L.	41-Aero Engr
	ARC/Gera, J.	

**NAG 2-236**                      **Stanford University**                      **1498**  
Recent advances in aerodynamics and aeroacoustics

<i>Period</i>	<i>Obligations</i>	
10/01/82-08/31/84	FY85:	TOTAL: \$60,633
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Karamcheti, K.	ARC/Deckert, W.	41-Aero Engr

**NASA'S UNIVERSITY PROGRAM  
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**NAG 2-246** **Stanford University** **1499**  
Development of an aviation software testing methodology  
*Period* *Obligations*  
08/01/83-09/30/85 FY85: \$30,000 TOTAL: \$245,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McCluskey, E. J. ARC/Saito, J. 41-Aero Engr

**NAG 2-248** **Stanford University** **1500**  
Design of testbed and emulation tools  
*Period* *Obligations*  
10/01/83-10/31/85 FY85: \$77,359 TOTAL: \$227,359  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lundstrom, S. F. ARC/Stevens, K. G., Jr.  
Flynn, M. J. 22-Computer Science  
Tennal, K. B. ARC/Schulbach, C. H.

**NAG 2-269** **Stanford University** **1501**  
Cognitive and perceptual principles of window based computer dialogues  
*Period* *Obligations*  
12/01/83-11/30/85 FY85: \$146,000 TOTAL: \$314,030  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pavel, M. ARC/Palmer, E. A. 69-Psych, NEC  
Card, S. K. ARC/Nagel, D.  
Farrell, J.

**NAG 2-271** **Stanford University** **1502**  
Studies of wing tip blowing  
*Period* *Obligations*  
10/01/83-09/30/86 FY85: \$173,362 TOTAL: \$260,376  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Roberts, L. ARC/Hicks, R. M. 41-Aero Engr  
Tavella, D. ARC/Presley, L.

**NAG 2-276** **Stanford University** **1503**  
High accuracy thermal conductivity measurements near the lambda transition of helium with very high temperature resolution  
*Period* *Obligations*  
11/01/83-05/31/86 FY85: \$46,422 TOTAL: \$84,004  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fairbanks, W. M. ARC/Kittel, P. 13-Physics  
Lipa, J. A.

**NAG 2-292** **Stanford University** **1504**  
Fiber optics implementation of expressnet  
*Period* *Obligations*  
01/01/84-04/30/86 FY85: \$50,000 TOTAL: \$100,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tobagi, F. A. ARC/Grant, T. L. 45-Elec Engr  
ARC/Lum, H.

**NAG 2-331** **Stanford University** **1505**  
Study of an annular wall jet  
*Period* *Obligations*  
10/01/84-09/30/85 FY85: \$21,322 TOTAL: \$21,322  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Roberts, L. ARC/Keener, E. R. 41-Aero Engr

**NAG 2-348** **Stanford University** **1506**  
Biochemical model for relation of exercise to bone health  
*Period* *Obligations*  
02/01/85-09/30/85 FY85: \$23,700 TOTAL: \$23,700  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Steele, C. R. ARC/Young, D. R. 56-Medical Sciences  
Carter, D.  
Whalen, R.

**NAG 2-359** **Stanford University** **1507**  
Adaptive control of nonlinear systems  
*Period* *Obligations*  
08/01/85-07/31/86 FY85: \$44,837 TOTAL: \$44,837  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Franklin, G. F. ARC/Meyer, G. 49-Engr, NEC  
Kosut, R. L.

**NAG 3-3** **Stanford University** **1508**  
Heat transfer and hydrodynamic studies on a curved surface with full-coverage film coolings  
*Period* *Obligations*  
11/01/79-10/26/85 FY85: \$70,000 TOTAL: \$562,771  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Johnston, J. P. LERC/Gaugler, R. E. 46-Mech Engr  
Moffat, R. J.  
Kays, W. M.

**NAG 3-63** **Stanford University** **1509**  
Computing low-thrust transfers to synchronous orbit  
*Period* *Obligations*  
05/02/80-12/28/84 FY85: TOTAL: \$145,979  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Breakwell, J. V. LERC/Gorland, S. 42-Astro Engr  
Redding, D.

**NAG 3-248** **Stanford University** **1510**  
Structure and high temperature strength of properties of cobalt and nickel aluminides  
*Period* *Obligations*  
01/02/82-12/31/85 FY85: \$41,299 TOTAL: \$196,080  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Nix, W. D. LERC/Whittenberger, J. D.  
Sinclair, R. 47-Materials Engr  
Gibeling, J. C.

**NAG 3-261** **Stanford University** **1511**  
Free surface phenomena under low and zero gravity conditions  
*Period* *Obligations*  
02/25/82-02/23/84 FY85: TOTAL: \$46,776  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hesslink, L. LERC/Chai, A. T. 13-Physics

**NAG 3-285** **Stanford University** **1512**  
Velocity visualization in gaseous flows  
*Period* *Obligations*  
05/15/82-05/12/85 FY85: TOTAL: \$164,258  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hanson, R. K. LERC/Bosque, M. A. 41-Aero Engr

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NAG 3-319** **Stanford University** **1513**  
 An element-by-element solution algorithm for problems of structural mechanics  
*Period* *Obligations*  
 09/01/82-09/30/86 FY85: \$80,000 TOTAL: \$218,230  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Hughes, T. J. LERC/Chamis, C. C. 41-Aero Engr  
 LERC/Hirschbein, M. S.

**NAG 3-522** **Stanford University** **1514**  
 Experimental study of the effects of very high turbulence on convective heat transfer  
*Period* *Obligations*  
 04/01/84-10/31/84 FY85: \$130,000 TOTAL: \$182,708  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Moffat, R. J. LERC/Rohde, J. E. 46-Mech Engr

**NAG 3-557** **Stanford University** **1515**  
 Free surface phenomena under low and zero gravity conditions  
*Period* *Obligations*  
 06/01/84-03/31/85 FY85: TOTAL: \$77,300  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Hesselink, L. LERC/Chai, A. T. 13-Physics

**NAG 5-220** **Stanford University** **1516**  
 Growth and evaluation of crystals for infrared nonlinear applications  
*Period* *Obligations*  
 02/01/82-08/31/85 FY85: TOTAL: \$147,844  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Byer, R. L. GSFC/Buften, J. L. 45-Elec Engr  
 Feigelson, R. S. GSFC/Degnan, J. J.

**NAG 5-261** **Stanford University** **1517**  
 Research relative to spatio-temporal reasoning  
*Period* *Obligations*  
 08/01/82-08/31/85 FY85: TOTAL: \$227,837  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Binford, T. O. GSFC/Paddack, S. J.  
 Buchanan, B. G. 22-Computer Science

**NAG 5-476** **Stanford University** **1518**  
 Investigations of controlled and naturally occurring wave-particle interaction  
*Period* *Obligations*  
 10/01/84-09/30/86 FY85: \$212,826 TOTAL: \$391,826  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Helliwell, R. A. GSFC/Bullock, G. D. 19-Phys Sci, NEC  
 GSFC/Hoffman, R. A.

**NAG 5-622** **Stanford University** **1519**  
 The development and test of multi-anode microchannel array detector systems II soft X-ray detectors  
*Period* *Obligations*  
 02/01/84-10/31/85 FY85: TOTAL: \$72,989  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Timothy, J. G. GSFC/Early, L. J. 13-Physics  
 GSFC/Pless, R. H.

**NAG 8-26** **Stanford University** **1520**  
 Cryogenic equivalence principle experiment on shuttle  
*Period* *Obligations*  
 08/01/84-04/30/85 FY85: \$150,000 TOTAL: \$150,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Ereritt, C. W. MSFC/Decker, R. 13-Physics  
 MSFC/Baugher, C.

**NAG 8-489** **Stanford University** **1521**  
 Protein crystal growth in low gravity  
*Period* *Obligations*  
 08/09/84-11/08/85 FY85: TOTAL: \$107,070  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Feigelson, R. S. MSFC/Fogle, V. 47-Materials Engr

**NAG 8-490** **Stanford University** **1522**  
 Search for rapidly modulated emission in bright X-ray sources using the HEAO-A1 data base  
*Period* *Obligations*  
 08/07/84-02/07/86 FY85: TOTAL: \$19,523  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Fairbank, W. M. MSFC/Johnson, W. G. 11-Astronomy  
 Wagoner, R. V.

**NAGW 92** **Stanford University** **1523**  
 Research in solar plasma theory  
*Period* *Obligations*  
 07/15/80-07/14/86 FY85: \$88,000 TOTAL: \$929,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Sturrock, P. A. HQ-EE/Butler, D. M. 13-Physics  
 GSFC/Curtis, S. A.

**NAGW 152** **Stanford University** **1524**  
 New theoretical models of Jupiter's ionosphere in response to the results of radio occultation observations  
*Period* *Obligations*  
 03/15/81-09/30/84 FY85: TOTAL: \$201,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Eshleman, V. R. HQ-EL/Brinton, H. C. 13-Physics  
 HQ-EL/Brunk, W. E.

**NAGW 235** **Stanford University** **1525**  
 Study of the dynamics of atmosphere-ionosphere-magnetosphere interactions  
*Period* *Obligations*  
 08/15/81-09/30/85 FY85: \$170,000 TOTAL: \$1,608,120  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Banks, P. M. HQ-EE/Lynch, J. T. 42-Astro Engr  
 HQ-EE/Shawhan, S. D.

**NAGW 278** **Stanford University** **1526**  
 Theoretical studies of the solar wind flow around the Earth and other planets  
*Period* *Obligations*  
 03/01/82-04/30/86 FY85: \$65,000 TOTAL: \$215,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Spreiter, J. R. HQ-EE/Lynch, J. T. 13-Physics  
 HQ-EE/Shawhan, S. D.

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NAGW 299**                      **Stanford University**                      **1527**  
Theoretical studies of cosmological tests from space observations

<i>Period</i>	<i>Obligations</i>	
03/01/82-10/31/85	FY85: \$25,911	TOTAL: \$55,007
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wagoner, R. V.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

**NAGW 361**                      **Stanford University**                      **1528**  
Interpretation of Seasat SAR imagery in terms of ocean surface parameters using specially processed data from the JASIN and GOASEX experiments

<i>Period</i>	<i>Obligations</i>	
06/01/82-12/31/85	FY85:	TOTAL: \$92,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Peterson, A. M.	HQ-EE/Patzert, W. C.	33-Oceanography
Gonzalez, F. I.	HQ-EE/Wilson, W. S.	
Bracewell, R. N.		

**NAGW 419**                      **Stanford University**                      **1529**  
Formation of the Stanford center for aeronautics and space information sciences

<i>Period</i>	<i>Obligations</i>	
01/12/83-12/14/85	FY85: \$900,000	TOTAL: \$2,065,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Banks, P. M.	HQ-RT/Larsen, R. L.	
		22-Computer Science
Wiskerchen, M. J.	HQ/Holcomb, L. B.	

**NAGW 538**                      **Stanford University**                      **1530**  
Investigation of internal gravity waves and other structure in Titan's atmosphere

<i>Period</i>	<i>Obligations</i>	
02/15/84-02/14/85	FY85:	TOTAL: \$50,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tyler, G. L.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 540**                      **Stanford University**                      **1531**  
Evaluation of a deformable diffraction grating for a stigmatic EUV spectroheliometer

<i>Period</i>	<i>Obligations</i>	
02/15/84-11/30/85	FY85: \$70,000	TOTAL: \$109,750
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Timothy, J. G.	HQ-EZ/Spicer, D. S.	13-Physics

**NAGW 551**                      **Stanford University**                      **1532**  
Development and test of ultra-large-format multi anode microchannel array detector systems

<i>Period</i>	<i>Obligations</i>	
12/01/83-10/31/85	FY85:	TOTAL: \$578,608
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Timothy, J. G.	HQ-EZ/Weiler, E.	11-Astronomy
	HQ-EZ/Bogges, N. W.	

**NAGW 554**                      **Stanford University**                      **1533**  
Pathways of nutrient loss following land clearing in humid tropical forest

<i>Period</i>	<i>Obligations</i>	
02/15/84-09/30/85	FY85: \$59,987	TOTAL: \$79,983
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Vitousek, P.	HQ-EB/Devincenzi, D. L.	
		51-Biological Sci
Matson, P. A.	HQ-EB/Rambler, M. B.	

**NAGW 572**                      **Stanford University**                      **1534**  
Engineering information database study

<i>Period</i>	<i>Obligations</i>	
09/12/83-05/31/84	FY85:	TOTAL: \$47,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Banks, P. M.	HQ-EE/Butler, D. M.	99-Multi-Discip
	HQ-EE/Larsen, R. L.	

**NAGW 627**                      **Stanford University**                      **1535**  
Development and test of a pulse-counting imaging detector system for solar system studies at ultraviolet and visible wavelengths

<i>Period</i>	<i>Obligations</i>	
01/05/84-10/31/85	FY85:	TOTAL: \$30,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Timothy, J. G.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W.	

**NAGW 628**                      **Stanford University**                      **1536**  
Interpretation of SAR images of sea ice

<i>Period</i>	<i>Obligations</i>	
03/01/84-11/30/85	FY85: \$120,759	TOTAL: \$156,159
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Vesecky, J.	HQ-EE/Thomas, R. H.	33-Oceanography
Bracewell, R.	HQ-EE/Wilson, W. S.	

**NAGW 646**                      **Stanford University**                      **1537**  
Gamma ray bursts and neutron star physics

<i>Period</i>	<i>Obligations</i>	
07/15/84-07/14/85	FY85:	TOTAL: \$8,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Petrosian, V.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Ormes, J. F.	

**NAGW 653**                      **Stanford University**                      **1538**  
A comparative study of planetary and terrestrial plasma waves and wave-particle interactions

<i>Period</i>	<i>Obligations</i>	
09/01/84-08/31/85	FY85:	TOTAL: \$38,882
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Inan, U. S.	HQ-EE/Lynch, J. T.	13-Physics
	HQ-EL/Brinton, H. C.	

**NAGW 759**                      **Stanford University**                      **1539**  
A comparative study of planetary and terrestrial plasma wave-particle interactions

<i>Period</i>	<i>Obligations</i>	
09/01/85-08/31/86	FY85: \$40,623	TOTAL: \$40,623
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Inan, U. S.	HQ-EE/Lynch, J. T.	13-Physics
	HQ-EE/Shawhan, S. D.	

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAS 5-25688** **Stanford University** **1540**  
Controlled and naturally occurring wave particle interaction-  
investigation on Dynamics Explorer phase III  
*Period* *Obligations*  
05/01/80-09/30/84 FY85: TOTAL: \$578,268  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Nelliwek, R. A. GSFC/Bullock, G. D. 11-Astronomy

**NAS 5-25744** **Stanford University** **1541**  
International Sun-Earth Explorer data reduction  
*Period* *Obligations*  
11/01/79-09/30/84 FY85: TOTAL: \$613,370  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Helliwell, R. A. GSFC/Wales, R. O. 11-Astronomy

**NAS 5-26682** **Stanford University** **1542**  
Design phase of total absorption shower counter  
*Period* *Obligations*  
08/01/81-12/31/85 FY85: \$148,000 TOTAL: \$1,812,370  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hofstadter, R. GSFC/Hartman, R. C. 11-Astronomy  
GSFC/Campbell, C. E.

**NAS 5-27557** **Stanford University** **1543**  
Implementation phase for the energetic gamma experiment  
telescope (EGRET)  
*Period* *Obligations*  
03/07/83-08/31/88 FY85: \$2,200,000 TOTAL: \$6,638,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hofstadter, R. GSFC/Hartman, R. C. 11-Astronomy  
Hughes, E. B. GSFC/Campbell, C. E.

**NAS 5-28447** **Stanford University** **1544**  
Data reduction and analysis for ISEE 1 spacecraft's VLF  
propagation experiment  
*Period* *Obligations*  
10/01/84-09/30/85 FY85: \$140,000 TOTAL: \$140,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Helliwell, R. A. GSFC/Wales, R. O. 31-Atmos Sci

**NAS 8-33796** **Stanford University** **1545**  
A preliminary study of a cryogenic equivalence principle experi-  
ment on shuttle  
*Period* *Obligations*  
04/30/80-07/30/84 FY85: TOTAL: \$159,861  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Everitt, C. W. MSFC/Decher, R. 31-Atmos Sci  
Worden, P. W. MSFC/Baugher, C. R.

**NAS 8-34430** **Stanford University** **1546**  
Dynamics-A Explorer rims data analysis  
*Period* *Obligations*  
09/17/81-09/30/85 FY85: \$9,900 TOTAL: \$81,492  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Banks, P. M. MSFC/Chappell, C. R. 31-Atmos Sci  
MSFC/Fields, S. A.

**NAS 8-34619** **Stanford University** **1547**  
Develop a program for the study of general relativity theory  
*Period* *Obligations*  
11/30/81-06/30/85 FY85: \$1,280,000 TOTAL: \$4,950,330  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Everitt, C. W. MSFC/Potter, R. 13-Physics  
Fairbanks, W. M.

**NAS 8-34872** **Stanford University** **1548**  
Influence of low frequency vibrations on growth of single crystals  
from melts and solutions  
*Period* *Obligations*  
07/06/82-01/06/84 FY85: TOTAL: \$80,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ferguson, R. S. MSFC/Fogle, V. 47-Materials Engr  
Elwell, D.

**NAS 8-35350** **Stanford University** **1549**  
Research study: Sepac co-investigator support  
*Period* *Obligations*  
07/17/83-12/31/87 FY85: \$120,000 TOTAL: \$330,395  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Banks, P. M. MSFC/Jones, C. T. 13-Physics

**NAS 8-35502** **Stanford University** **1550**  
High voltage characteristics of the electrodynamic tether and  
the generation of power and propulsion  
*Period* *Obligations*  
08/10/83-04/01/85 FY85: TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Banks, P. M. MSFC/Stone, N. H. 31-Atmos Sci  
Storey, L. R. MSFC/Laue, J. H.

**NAS 8-36011** **Stanford University** **1551**  
Dynamics of atmospheric ionosphere magnetosphere interac-  
tions/(VCAP) vehicle charging and potential  
*Period* *Obligations*  
06/22/84-07/31/85 FY85: \$636,587 TOTAL: \$921,705  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Banks, P. M. MSFC/Harwell, R. F. 31-Atmos Sci  
Williamson, P. R.  
Storey, L. R.

**NAS 8-36125** **Stanford University** **1552**  
Gravity probe b, shuttle flight experiment, phase I  
*Period* *Obligations*  
03/29/85-03/29/87 FY85: \$3,320,000 TOTAL: \$3,320,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Everitt, C. W. MSFC/Neighbors, J. K. 13-Physics  
Debra, D.  
Fairbank, W.

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NAS 8-36481** **Stanford University** **1553**  
Study specifically directed toward the development of contoured layered synthetic microstructure (LSM) optics for use in coupling glancing incidence X-ray mirror systems

Period	Obligations	
04/17/85-10/16/85	FY85: \$60,000	TOTAL: \$60,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Walker, A. B.	MSFC/Hoover, R.	19-Phys Sci, NEC
Barhee, T.	MSFC/Nelson, V.	

**NASW 3935** **Stanford University** **1554**  
Balloon-borne ultraviolet stellar spectrograph project

Period	Obligations	
05/01/84-07/31/85	FY85:	TOTAL: \$30,996
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Timothy, J. G.	HQ-EZ/Weiler, E.	11-Astronomy
	HQ-EZ/Stencel, R. E.	

**NASW 3981** **Stanford University** **1555**  
Defunction and development of a space dome radio receiving system with occultation eistatic resolution imaging capabilities

Period	Obligations	
11/01/84-10/31/85	FY85: \$100,000	TOTAL: \$100,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tyler, G. L.	HQ-EL/Fescelus, F.	11-Astronomy
	HQ-EL/Quaide, W. L.	

**NCA 2-11** **Stanford University** **1556**  
Investigation of 3 D turbulent boundary layers

Period	Obligations	
04/01/85-03/31/86	FY85: \$20,000	TOTAL: \$20,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Johnston, J. P.	ARC/Driver, D. M.	46-Mech Engr

**NCA 2-14** **Stanford University** **1557**  
Observations and modelling of star formation regions in M82 and the Milky Way

Period	Obligations	
01/01/85-12/31/85	FY85: \$12,500	TOTAL: \$12,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Petrosian, V.	ARC/Erickson, E.	11-Astronomy

**NCA 2-18** **Stanford University** **1558**  
Vortex distortion by a turbulent boundary layer

Period	Obligations	
07/01/85-03/31/86	FY85: \$21,113	TOTAL: \$21,113
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Eaton, J. K.	ARC/Westphal, R. V.	41-Aero Engr

**NCA 2-20** **Stanford University** **1559**  
Computer-extended series for higher order unsteady boundary layers

Period	Obligations	
07/01/85-09/30/85	FY85: \$3,079	TOTAL: \$3,079
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dyke, M. V.	ARC/Lomax, H.	41-Aero Engr

**NCA 2-30** **Stanford University** **1560**  
Intensive site studies in biogeochemical cycling: Tropical forest ecosystems (joint research interchange)

Period	Obligations	
04/01/85-03/31/87	FY85: \$32,641	TOTAL: \$32,641
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Vitousek, P.	ARC/Peterson, D. L.	54-Env Biology

**NCA 2-31** **Stanford University** **1561**  
Variations in foliar nitrogen components with nutrient, light, and water limitations

Period	Obligations	
04/01/85-03/31/87	FY85: \$17,527	TOTAL: \$17,527
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mooney, H. A.	ARC/Matson, P.	51-Biological Sci

**NCA 2-40** **Stanford University** **1562**  
Extension of a new implicit method for solving the Navier Stokes equations to include turbulence transport equations

Period	Obligations	
06/15/85-06/14/86	FY85: \$16,000	TOTAL: \$16,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
MacCormack, R. W.	ARC/Viegas, J. R.	41-Aero Engr

**NCA 2-41** **Stanford University** **1563**  
Re-examination of mixing layer simulations by the two dimensional vortex method

Period	Obligations	
05/12/85-12/11/85	FY85: \$14,597	TOTAL: \$14,597
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ferziger, J. H.	ARC/Leonard, A.	46-Mech Engr

**NCA 2-43** **Stanford University** **1564**  
Three dimensional hypersonic flow joint research interchange

Period	Obligations	
07/01/85-09/30/85	FY85: \$7,822	TOTAL: \$7,822
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
MacCormack, R. W.	ARC/Hung, C. M.	41-Aero Engr

**NCA 2-53** **Stanford University** **1565**  
The effect of particle size and support crystallinity on the catalytic oxidation of CO over pd, pt alumina

Period	Obligations	
06/01/85-05/31/87	FY85: \$5,000	TOTAL: \$5,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Boudart, M.	ARC/Poppa, H.	43-Chem Engr

**NCA 2-54** **Stanford University** **1566**  
Investigation of the kinetic isolation tether experiment

Period	Obligations	
04/01/85-12/31/85	FY85: \$34,114	TOTAL: \$34,114
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Powell, J. D.	ARC/Lemke, L. G.	41-Aero Engr

**NCA 2-58** **Stanford University** **1567**  
Computer graphics visualization of vortex loops in turbulent flows

Period	Obligations	
07/01/85-10/05/85	FY85: \$5,150	TOTAL: \$5,150
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Reynolds, W. C.	ARC/Moin, P.	46-Mech Engr



# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NCA 2-72** **Stanford University** **1568**  
 Analysis of the physics of three-dimensional flow separation using a vectorized Navier-Stokes code (joint research interchange)

Period	Obligations	
10/01/85-09/30/86	FY85: \$7,000	TOTAL: \$7,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Spreiter, J. R.	ARC/Pulliam, T. H.	13-Physics

**NCA 2-73** **Stanford University** **1569**  
 A study of fast solver algorithms for finding steady state solutions of the equations of gasdynamics (joint research interchange)

Period	Obligations	
10/01/85-09/30/86	FY85: \$7,000	TOTAL: \$7,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Spreiter, J. R.	ARC/Lomax, H.	13-Physics

**NCA 2-74** **Stanford University** **1570**  
 An unconditionally stable two-factor semi-flux split algorithm for three-dimensional flow simulations (joint research interchange)

Period	Obligations	
10/01/85-09/30/86	FY85: \$8,000	TOTAL: \$8,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Baganoff, D.	ARC/Warming, R. F.	41-Aero Engr
	ARC/Steger, J. L.	

**NCA 2-745205** **Stanford University** **1571**  
 A Chimera scheme for the transonic solution of the Euler equations using a zonal approach

Period	Obligations	
06/01/82-04/01/84	FY85:	TOTAL: \$31,449
Prin. Invest.	NASA Tech. Officer	CASE Category
Chapman, D.	ARC/Lomax, H.	41-Aero Engr

**NCA 2-745206** **Stanford University** **1572**  
 Investigations of the role of vasopressin in the CNS control of body temperature and metabolism

Period	Obligations	
06/15/82-09/14/83	FY85:	TOTAL: \$8,043
Prin. Invest.	NASA Tech. Officer	CASE Category
Heller, H. C.	ARC/Williams, B. A.	51-Biological Sci
George, C. P.	ARC/Mehler, W. R.	

**NCA 2-745207** **Stanford University** **1573**  
 Construction of a 1K bolometer for astronomical observations at millimeter wavelengths

Period	Obligations	
07/01/82-06/30/84	FY85:	TOTAL: \$26,737
Prin. Invest.	NASA Tech. Officer	CASE Category
Walker, A. B.	ARC/Werner, M. W.	11-Astronomy
	ARC/Roellig, T. P.	

**NCA 2-745208** **Stanford University** **1574**  
 Endocrine modulation of receptors of rodent bone cells

Period	Obligations	
08/01/82-07/31/84	FY85:	TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Feldman, D.	ARC/Holton, E. M.	51-Biological Sci

**NCA 2-745302** **Stanford University** **1575**  
 Study on the mapping of Navier-Stokes algorithms onto multiple instruction/multiple data stream computers

Period	Obligations	
10/01/82-11/30/84	FY85:	TOTAL: \$54,596
Prin. Invest.	NASA Tech. Officer	CASE Category
Baganoff, D.	ARC/Stevens, K. G.	41-Aero Engr
Steger, J. L.		

**NCA 2-745304** **Stanford University** **1576**  
 Sensitivity maximization of an astronomical grating spectrometer

Period	Obligations	
10/01/82-09/30/84	FY85:	TOTAL: \$13,105
Prin. Invest.	NASA Tech. Officer	CASE Category
Petrosian, V.	ARC/Erickson, E. F.	11-Astronomy

**NCA 2-745306** **Stanford University** **1577**  
 Optical computer assisted tomography measurements of fluid flows (joint research interchange)

Period	Obligations	
03/01/83-09/30/84	FY85:	TOTAL: \$21,542
Prin. Invest.	NASA Tech. Officer	CASE Category
Hesselink, L.	ARC/Lee, G.	19-Phys Sci, NEC

**NCA 2-745307** **Stanford University** **1578**  
 Improved robustness and discontinuity-capturing in finite element methods for the compressible Euler equations

Period	Obligations	
07/01/83-09/30/84	FY85:	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hughes, T. J.	ARC/Lomax, H.	41-Aero Engr

**NCA 2-745309** **Stanford University** **1579**  
 Computation of 3-D strake-wing configuration flow fields

Period	Obligations	
07/01/83-09/30/84	FY85:	TOTAL: \$22,919
Prin. Invest.	NASA Tech. Officer	CASE Category
Cantwell, B. J.	ARC/Kutler, P.	41-Aero Engr

**NCA 2-745310** **Stanford University** **1580**  
 Investigation of effective configurations for management information systems

Period	Obligations	
06/01/83-07/31/84	FY85:	TOTAL: \$11,012
Prin. Invest.	NASA Tech. Officer	CASE Category
Dunn, D. A.	ARC/Deckert, W. H.	
	ARC/Few, D. D.	29-Math/Computer, NEC

**NCA 2-745311** **Stanford University** **1581**  
 Crystal size and morphology of iron particles on various supports: Their influence on the chemisorption of dihydrogen and the rate of H<sub>2</sub>-D<sub>2</sub> equilibrium catalyzed by iron

Period	Obligations	
06/01/83-05/31/85	FY85:	TOTAL: \$26,970
Prin. Invest.	NASA Tech. Officer	CASE Category
Boudart, M.	ARC/Poppa, H.	43-Chem Engr

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NCA 2-745313** **Stanford University** **1582**  
Numerical simulation of three-dimensional separated flows  
*Period* *Obligations*  
07/01/83-06/30/85 FY85: \$29,885 TOTAL: \$58,885  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ferziger, J. H. ARC/Leonard, A. 22-Computer Science

**NCA 2-745315** **Stanford University** **1583**  
Electrostatic stabilization for rotary wing remotely piloted vehicles (RPV)  
*Period* *Obligations*  
07/01/83-10/31/84 FY85: TOTAL: \$39,973  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Debra, D. ARC/Schmitz, F. H. 41-Aero Engr  
ARC/Gossett, T. D.

**NCA 2-745401** **Stanford University** **1584**  
Numerical experiments with second order upwind difference schemes  
*Period* *Obligations*  
10/01/83-09/30/85 FY85: \$14,380 TOTAL: \$29,275  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Baganoff, D. ARC/Warming, R. F. 41-Aero Engr

**NCA 2-745402** **Stanford University** **1585**  
The role of atrial volume receptors in the regulation of body fluids in man  
*Period* *Obligations*  
11/01/83-10/31/85 FY85: \$37,000 TOTAL: \$67,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Debusk, R. F. ARC/Sandler, H. 56-Medical Sciences  
Haskell, W. L. ARC/Goldwater, D.

**NCA 2-745403** **Stanford University** **1586**  
Carbon isotopic fractionation in cyanobacteria and in cyanobacterial mats  
*Period* *Obligations*  
11/01/83-12/31/84 FY85: TOTAL: \$33,001  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Briggs, W. R. ARC/Des Marais, D. J. 51-Biological Sci

**NCA 2-745404** **Stanford University** **1587**  
A study of high Reynolds number flow past an aerodynamic body using a vectorized 3-D Navier Stokes code  
*Period* *Obligations*  
10/01/83-09/30/85 FY85: \$22,000 TOTAL: \$36,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Spreiter, J. R. ARC/Pulliam, T. H. 29-Math/Computer, NEC

**NCA 2-745405** **Stanford University** **1588**  
Interaction between a vortex and a turbulent boundary layer in a streamwise pressure gradient  
*Period* *Obligations*  
03/01/84-02/28/85 FY85: TOTAL: \$15,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Eaton, J. K. ARC/Westphal, R. V. 41-Aero Engr

**NCA 2-745406** **Stanford University** **1589**  
Studies in prolog machines  
*Period* *Obligations*  
02/01/84-01/31/86 FY85: \$30,000 TOTAL: \$69,804  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Flynn, M. J. ARC/Lum, H. 22-Computer Science

**NCA 2-745407** **Stanford University** **1590**  
Space infrared telescope pointing control system  
*Period* *Obligations*  
01/01/84-12/31/85 FY85: \$39,952 TOTAL: \$64,952  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Powell, J. D. ARC/Lemke, L. G. 11-Astronomy

**NCA 2-745408** **Stanford University** **1591**  
High performance computation for signal processing  
*Period* *Obligations*  
06/01/84-05/31/86 FY85: \$40,000 TOTAL: \$80,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Peterson, A. M. ARC/Wolfe, J. H. 29-Math/Computer, NEC  
Linscott, I. R. ARC/Oliver, B. M.

**NCA 2-745409** **Stanford University** **1592**  
Correlation of structural electronic and adsorption properties of supported metal clusters  
*Period* *Obligations*  
04/01/84-03/31/86 FY85: \$14,509 TOTAL: \$27,825  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bates, C. W., Jr. ARC/Poppa, H. 47-Materials Engr

**NCA 2-745410** **Stanford University** **1593**  
Ecosystem productivity, nutrient cycling, and canopy chemistry  
*Period* *Obligations*  
05/15/84-03/31/85 FY85: \$2,400 TOTAL: \$20,295  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Vitousek, P. ARC/Peterson, D. L. 55-Agriculture Sci  
ARC/Matson, P. A.

**NCA 2-745411** **Stanford University** **1594**  
Optical information processing  
*Period* *Obligations*  
06/01/84-09/30/85 FY85: TOTAL: \$37,613  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hesslink, L. ARC/Goebel, J. H. 41-Aero Engr

**NCA 2-745412** **Stanford University** **1595**  
1mm continuum astronomical observations using a 0.1 K bolometer  
*Period* *Obligations*  
07/01/84-06/30/86 FY85: \$18,387 TOTAL: \$33,798  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Walker, A. B. ARC/Werner, M. W. 11-Astronomy  
ARC/Roellig, T. P.

**NCA 2-745413** **Stanford University** **1596**  
Adaptation of microcomputer-based display systems for portable field usage (land resources information system pilot)  
*Period* *Obligations*  
09/01/84-10/31/85 FY85: \$19,652 TOTAL: \$19,652  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lyon, R. J. ARC/Likens, W. C. 39-Env Sci, NEC

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NCA 2-745501** **Stanford University** **1597**  
Polychlorinated biphenyls in sediments  
*Period* *Obligations*  
10/01/84-09/30/85 FY85: \$19,307 TOTAL: \$19,378  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Vitousek, P. ARC/Lawless, J. G. 54-Env Biology

**NCC 2-1** **Stanford University** **1604**  
Development of ultrasonic indices for Space Shuttle passenger selection  
*Period* *Obligations*  
04/01/79-03/31/86 FY85: \$60,000 TOTAL: \$445,200  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Popp, R. ARC/Goldwater, D. 56-Medical Sciences  
ARC/Sandler, H.

**NCA 2-745502** **Stanford University** **1598**  
Computation of three dimensional vortex motions in viscous, impulsively started jets diatomic molecule  
*Period* *Obligations*  
10/01/84-09/30/85 FY85: \$25,000 TOTAL: \$31,264  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Cantwell, B. J. ARC/Moin, P. 41-Aero Engr  
ARC/Kim, J.

**NCC 2-15** **Stanford University** **1605**  
A cooperative program in the computation of turbulent flows  
*Period* *Obligations*  
07/01/79-10/31/85 FY85: \$54,592 TOTAL: \$465,510  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ferziger, J. H. ARC/Leonard, A. 41-Aero Engr  
Reynolds, W. C. ARC/Inouye, M.

**NCA 2-745503** **Stanford University** **1599**  
Large-scale structure of the solar wind  
*Period* *Obligations*  
10/01/84-09/30/85 FY85: \$39,985 TOTAL: \$54,985  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Vesecky, J. F. ARC/Barnes, A. 11-Astronomy

**NCC 2-29** **Stanford University** **1606**  
NASA-Ames/Stanford Joint Institute for Aeronautics and Acoustics: Shuttle infrared telescope pointing control system  
*Period* *Obligations*  
10/01/79-12/31/84 FY85: TOTAL: \$206,602  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Powell, J. D. ARC/Lemke, L. G. 42-Astro Engr  
Vanbezooyen, R. W.

**NCA 2-745504** **Stanford University** **1600**  
Identification of neurotransmitter receptors in human emetic pathways  
*Period* *Obligations*  
01/01/85-12/31/86 FY85: \$25,099 TOTAL: \$36,899  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Peroutka, S. J. ARC/Daunton, N. G. 51-Biological Sci

**NCC 2-44** **Stanford University** **1607**  
Perceptual problems in aeronautics  
*Period* *Obligations*  
11/01/79-04/30/85 FY85: TOTAL: \$453,648  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Karamcheti, K. ARC/Ahumada, A. J., Jr. 69-Psych, NEC  
Wandell, B. ARC/Nagel, D. C.

**NCA 2-745505** **Stanford University** **1601**  
Mathematical modeling of aerodynamic bifurcations in flight dynamics with application to vortex-induced oscillations  
*Period* *Obligations*  
12/01/84-05/31/85 FY85: \$20,000 TOTAL: \$43,935  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Keller, J. B. ARC/Tobak, M. 21-Mathematics

**NCC 2-55** **Stanford University** **1608**  
The research and training activities for the Joint Institute for Aeronautics and Acoustics  
*Period* *Obligations*  
12/01/79-12/31/85 FY85: \$200,000 TOTAL: \$1,113,110  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Roberts, L. ARC/Deckert, W. H. 41-Aero Engr  
ARC/Hickey, D. H.

**NCA 2-745506** **Stanford University** **1602**  
Microbial mats and cyanobacteria: Carbon isotope measurements and electron microscopy  
*Period* *Obligations*  
01/01/85-10/31/85 FY85: \$27,000 TOTAL: \$35,771  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Biggs, W. ARC/Des Marais, D. J. 51-Biological Sci

**NCC 2-74** **Stanford University** **1609**  
Stanford/Ames Joint Institute for Aeronautics and Acoustics: Aerodynamic studies relating to short-haul aircraft  
*Period* *Obligations*  
03/01/80-10/31/85 FY85: \$56,766 TOTAL: \$410,981  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Roberts, L. ARC/Koenig, D. G. 41-Aero Engr  
Ayoub, A. ARC/Hickey, D. H.

**NCA 5-102** **Stanford University** **1603**  
Radar and radio remote sensing of the environment  
*Period* *Obligations*  
07/06/84-07/05/85 FY85: TOTAL: \$10,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Inan, U. GSFC/Connell, T. 39-Env Sci, NEC

**NCC 2-77** **Stanford University** **1610**  
Boundary layers and wakes of oscillating airfoils at subsonic and transonic speeds  
*Period* *Obligations*  
03/01/80-10/31/85 FY85: \$105,014 TOTAL: \$664,577  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Roberts, L. ARC/Lee, G. 41-Aero Engr

**NASA'S UNIVERSITY PROGRAM  
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<b>NCC 2-106</b>			
<b>Stanford University</b>		<b>1611</b>	
Studies of flight director systems for powered lift aircraft			
<i>Period</i>	<i>Obligations</i>		
11/01/80-01/31/86	FY85: \$120,000	TOTAL: \$594,354	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bryson, A. E., Jr.	ARC/Lebacqz, J. V.	41-Aero Engr	
Hindson, W. S.	ARC/Chen, R. T.		
<b>NCC 2-125</b>			
<b>Stanford University</b>		<b>1612</b>	
Computer simulation of surface and film processes			
<i>Period</i>	<i>Obligations</i>		
05/01/81-10/31/84	FY85:	TOTAL: \$197,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Tiller, W. A.	ARC/Cooper, D. M.	13-Physics	
Halicioglu, H. T.			
<b>NCC 2-126</b>			
<b>Stanford University</b>		<b>1613</b>	
The effects of simulated weightlessness on regional blood flow specifically during cardiovascular stress			
<i>Period</i>	<i>Obligations</i>		
01/01/81-08/31/84	FY85:	TOTAL: \$289,980	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Harrison, D. C.	ARC/Sandler, H.	59-Life Sci, NEC	
<b>NCC 2-149</b>			
<b>Stanford University</b>		<b>1614</b>	
Theoretical studies in aerodynamics			
<i>Period</i>	<i>Obligations</i>		
07/01/81-01/31/85	FY85:	TOTAL: \$360,530	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Roberts, L.	ARC/Davis, S.	41-Aero Engr	
	ARC/Lee, G.		
<b>NCC 2-150</b>			
<b>Stanford University</b>		<b>1615</b>	
Study of powered lift aircraft technology			
<i>Period</i>	<i>Obligations</i>		
07/01/81-10/31/85	FY85: \$92,725	TOTAL: \$333,456	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Roberts, L. R.	ARC/Koenig, D. G.	41-Aero Engr	
Tavella, J. D.	ARC/Hickey, D. H.		
<b>NCC 2-188</b>			
<b>Stanford University</b>		<b>1616</b>	
Tomographic reconstruction methods for use in rotorblade research			
<i>Period</i>	<i>Obligations</i>		
06/01/82-05/31/85	FY85: \$10,000	TOTAL: \$69,334	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Hesslink, L.	ARC/Yu, Y. H.	41-Aero Engr	
	ARC/Kittleson, J. K.		
<b>NCC 2-212</b>			
<b>Stanford University</b>		<b>1617</b>	
Studies of the effects of flow fields on noise directivity			
<i>Period</i>	<i>Obligations</i>		
08/01/82-07/31/84	FY85:	TOTAL: \$90,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Karamcheti, K.	ARC/Soderman, P. T.	41-Aero Engr	
Levin, H.	ARC/Hickey, D.		
<b>NCC 2-215</b>			
<b>Stanford University</b>		<b>1618</b>	
Communication scripts on the flight deck			
<i>Period</i>	<i>Obligations</i>		
10/01/82-09/30/85	FY85: \$34,727	TOTAL: \$104,779	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Calfee, R. C.	ARC/Tanner, T. A.	69-Psych, NEC	
	ARC/Murphy, M. R.		
<b>NCC 2-220</b>			
<b>Stanford University</b>		<b>1619</b>	
Advanced knowledge-based system architectures			
<i>Period</i>	<i>Obligations</i>		
10/01/82-11/30/85	FY85: \$100,000	TOTAL: \$265,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Feigenbaum, E. A.	ARC/Lum, H.	22-Computer Science	
<b>NCC 2-222</b>			
<b>Stanford University</b>		<b>1620</b>	
Infrared fiber optic materials			
<i>Period</i>	<i>Obligations</i>		
01/01/83-12/31/85	FY85:	TOTAL: \$72,569	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Feigelson, R. S.	ARC/Goebel, J. H.	47-Materials Engr	
Route, R. K.	ARC/Lum, H.		
<b>NCC 2-232</b>			
<b>Stanford University</b>		<b>1621</b>	
Pharmacologic countermeasures for minimizing post- space flight orthostatic intolerance			
<i>Period</i>	<i>Obligations</i>		
09/01/82-06/30/85	FY85:	TOTAL: \$123,770	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Harrison, D. C.	ARC/Sandler, H.	56-Medical Sciences	
Kates, R. E.	ARC/Goldwater, D.		
<b>NCC 2-238</b>			
<b>Stanford University</b>		<b>1622</b>	
Experimental studies of three dimensional turbulent boundary layers			
<i>Period</i>	<i>Obligations</i>		
03/01/83-02/28/86	FY85: \$40,202	TOTAL: \$145,202	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Eaton, J. K.	ARC/Johnson, D. A.	46-Mech Engr	
Johnston, J. P.	ARC/Westphal, R. V.		
<b>NCC 2-247</b>			
<b>Stanford University</b>		<b>1623</b>	
Investigation into air combat maneuvering and flight software			
<i>Period</i>	<i>Obligations</i>		
05/01/83-01/31/86	FY85: \$102,000	TOTAL: \$264,929	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Roberts, L.	ARC/Ardema, M.	41-Aero Engr	
<b>NCC 2-270</b>			
<b>Stanford University</b>		<b>1624</b>	
Study of atmospheric downburst phenomena			
<i>Period</i>	<i>Obligations</i>		
10/01/83-01/31/85	FY85:	TOTAL: \$39,647	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Roberts, L.	ARC/Bray, R. S.	41-Aero Engr	
<b>NCC 2-274</b>			
<b>Stanford University</b>		<b>1625</b>	
Research on knowledge representation			
<i>Period</i>	<i>Obligations</i>		
10/01/83-12/31/85	FY85: \$75,000	TOTAL: \$125,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Buchanan, B.	ARC/Lum, H.	22-Computer Science	

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**NCC 2-291** **Stanford University** **1626**  
Optimization of the cure window for a large scale filament wound case

Period	Obligations	
03/01/84-12/31/85	FY85: \$50,000	TOTAL: \$113,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Springer, G. S.	ARC/Cagliostro, D.	41-Aero Engr
	ARC/Ledbetter, F. E.	

**NCC 2-294** **Stanford University** **1627**  
Experimental studies of vortex flows

Period	Obligations	
03/01/84-02/28/86	FY85: \$91,295	TOTAL: \$177,577
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roberts, L.	ARC/King, L. S.	41-Aero Engr
	ARC/Davis, S. S.	

**NCC 2-295** **Stanford University** **1628**  
Design development of an eva prehensor

Period	Obligations	
01/01/84-03/31/86	FY85: \$150,000	TOTAL: \$300,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Leifer, L.	ARC/Vykukal, H. C.	49-Engr, NEC
Leblanc, M.		

**NCC 2-302** **Stanford University** **1629**  
24-hour sleep patterns of sleep and wakefulness before and after long-haul flights in commercial airline pilots

Period	Obligations	
07/01/84-09/30/85	FY85: \$106,000	TOTAL: \$212,433
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dement, W. C.	ARC/Lauber, J. K.	56-Medical Sciences
Carskadon, M. A.	ARC/Nagel, D. C.	

**NCC 2-304** **Stanford University** **1630**  
Environmental effects on composite materials composite materials

Period	Obligations	
08/01/84-10/31/85	FY85: \$40,000	TOTAL: \$50,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Springer, G. S.	ARC/Nelson, H. G.	47-Materials Engr

**NCC 2-307** **Stanford University** **1631**  
To initiate a NASA/university collaborative center of excellence in model-based human performance

Period	Obligations	
07/01/84-01/31/86	FY85: \$140,000	TOTAL: \$189,066
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wandell, B. A.	ARC/Nagel, D. C.	69-Psych, NEC

**NCC 2-322** **Stanford University** **1632**  
Stanford Ames institute for space research

Period	Obligations	
09/01/84-09/30/86	FY85: \$130,827	TOTAL: \$130,827
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Petrosian, V.	ARC/Colin, L.	99-Multi-Discip
	ARC/Brockner, D.	

**NCC 2-326** **Stanford University** **1633**  
Studies of influence of blowing on vortical lift

Period	Obligations	
10/01/84-10/31/85	FY85: \$110,810	TOTAL: \$110,810
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roberts, L.	ARC/Schiff, L.	41-Aero Engr
Wood, N.	ARC/Bencze, D. P.	

**NCC 2-332** **Stanford University** **1634**  
Computational models of human vision with application

Period	Obligations	
11/01/84-09/30/85	FY85: \$86,170	TOTAL: \$86,170
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wandell, B.	ARC/Ahumada, A. J.	69-Psych, NEC
	ARC/Watson, A. B.	

**NCC 2-333** **Stanford University** **1635**  
Control of spacecraft manipulator systems

Period	Obligations	
11/01/84-10/31/85	FY85: \$292,100	TOTAL: \$292,100
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cannon, R. H.	ARC/Lum, H.	42-Astro Engr

**NCC 2-341** **Stanford University** **1636**  
Study of leading edge blowing on a delta wing

Period	Obligations	
10/01/84-07/30/87	FY85: \$22,207	TOTAL: \$22,207
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roberts, L.	ARC/Bencze, D. P.	41-Aero Engr
	ARC/Schiff, L. B.	

**NCC 5-30** **Stanford University** **1637**  
Space science mission operations support

Period	Obligations	
03/01/84-04/30/86	FY85: \$967,581	TOTAL: \$1,189,581
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Banks, P. M.	GSFC/Connell, E. B.	49-Engr, NEC
Williamson, P. R.		

**NGL 05-020-007** **Stanford University** **1638**  
Guidance and control of flight vehicles

Period	Obligations	
08/17/72-08/14/84	FY85:	TOTAL: \$1,774,564
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bryson, A. E.	ARC/Erzberger, H.	49-Engr, NEC

**NGL 05-020-008** **Stanford University** **1639**  
A study of the effects on the Earth's environment of very low frequency radiation into the magnetosphere from electrical transmission lines and ground based very low frequency transmitters

Period	Obligations	
09/01/61-02/28/86	FY85: \$213,000	TOTAL: \$2,893,655
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Helliwell, R. A.	HQ-EE/Lynch, J. T.	13-Physics
	HQ-EE/Shawhan, S. D.	

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**NGL 05-020-014**      **Stanford University**      **1640**  
Theoretical and experimental radio and radar studies of lunar, planetary ionospheres, atmospheres, and surfaces of Sun and interplanetary medium

Period	Obligations
04/30/63-09/30/85	FY85: \$178,000    TOTAL: \$4,408,351
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Eshleman, V. R.	HQ-EL/Brinton, H. C.    31-Atmos Sci
	HQ-EL/Brunk, W. E.

**NGL 05-020-176**      **Stanford University**      **1641**  
Investigation of space-related whistler propagation phenomena in laboratory plasmas

Period	Obligations
03/02/67-07/31/85	FY85:                      TOTAL: \$1,452,100
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Crawford, F. W.	HQ-EE/Lynch, J. T.    19-Phys Sci, NEC
	HQ-EE/Shawhan, S. D.

**NGL 05-020-243**      **Stanford University**      **1642**  
Refined methods of aeroelastic analysis and optimization

Period	Obligations
08/14/67-08/31/87	FY85: \$22,000    TOTAL: \$315,764
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Ashley, H.	LARC/Doggett, R. V., Jr.    41-Aero Engr

**NGL 05-020-272**      **Stanford University**      **1643**  
Theoretical study of the solar atmosphere and the structure of active regions

Period	Obligations
06/07/68-09/30/85	FY85: \$145,000    TOTAL: \$1,619,013
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Sturrock, P. A.	HQ-EZ/Spicer, D. S.    13-Physics

**NGR 05-020-456**      **Stanford University**      **1644**  
Effects of altered gravitational stress on fluid balance and circulation of blood

Period	Obligations
05/01/70-06/30/84	FY85:                      TOTAL: \$422,090
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Luetscher, J. A.	ARC/Keil, L. C.    56-Medical Sciences

**NGR 05-020-559**      **Stanford University**      **1645**  
Structure of solar magnetic and velocity fields

Period	Obligations
03/22/72-11/30/85	FY85: \$135,000    TOTAL: \$1,357,826
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Walker, A. B.	HQ-EZ/Spicer, D. S.    11-Astronomy

**NGR 05-020-649**      **Stanford University**      **1646**  
Study of lunar and planetary surfaces

Period	Obligations
03/06/73-06/30/86	FY85: \$39,887    TOTAL: \$293,057
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Simpson, R. A.	HQ-EL/Scott, D. H.    32-Geological Sci
	HQ-EL/Boyce, J. M.

**NGR 05-020-668**      **Stanford University**      **1647**  
Magnetosphere structure and radiation mechanisms on pulsars

Period	Obligations
11/01/73-10/31/85	FY85: \$43,000    TOTAL: \$389,892
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Sturrock, P. A.	HQ-EZ/Kaluzienski, L. J.    11-Astronomy
	HQ-EZ/Ormes, J.

**NGT 05-020-412**      **Stanford University**      **1648**  
A summer program of NASA summer faculty fellowships

Period	Obligations
12/16/69-03/31/86	FY85: \$319,688    TOTAL: \$3,213,601
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Bershader, D.	HQ-LB/Owens, F. C.    49-Engr, NEC
Mayers, J.	

**NGT 05-020-801**      **Stanford University**      **1649**  
NASA graduate student training program

Period	Obligations
07/01/80-12/31/84	FY85:                      TOTAL: \$430,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Chapman, D. R.	HQ-RT/Graves, R. A., Jr.    41-Aero Engr

**NGT 05-020-804**      **Stanford University**      **1650**  
NASA graduate student researchers program

Period	Obligations
05/01/82-03/31/86	FY85:                      TOTAL: \$38,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Petrosian, V.	HQ-LB/Owens, F. C.    13-Physics

**NGT 05-020-805**      **Stanford University**      **1651**  
NASA graduate student researchers program

Period	Obligations
05/01/83-05/31/86	FY85: \$16,500    TOTAL: \$46,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Bates, C. W.	HQ-LB/Owens, F. C.    13-Physics

**NGT 05-020-806**      **Stanford University**      **1652**  
NASA graduate student researchers program

Period	Obligations
05/01/83-06/30/86	FY85: \$18,000    TOTAL: \$40,300
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Bershader, D.	HQ-LB/Owens, F. C.    41-Aero Engr

**NGT 05-020-808**      **Stanford University**      **1653**  
1983 summer faculty program

Period	Obligations
05/01/83-08/31/84	FY85:                      TOTAL: \$259,598
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Bershader, D.	HQ-LB/Owens, F. C.    49-Engr, NEC

**NGT 05-020-809**      **Stanford University**      **1654**  
NASA graduate student program

Period	Obligations
10/01/83-09/30/84	FY85:                      TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Lyon, R. J.	HQ-LB/Owens, F. C.    59-Life Sci, NEC

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**NSG 2121**                      **Stanford University**                      **1655**  
Preliminary design and computer simulation of a very large  
Fourier transform processor for the interstellar search system

Period	Obligations	
01/01/76-09/30/85	FY85: \$480,946	TOTAL: \$1,877,237
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Peterson, A. M.	ARC/Oliver, B. M.	49-Engr, NEC
	ARC/Billingham, J.	

**NSG 4002**                      **Stanford University**                      **1656**  
Theoretical and experimental investigations in the control of  
aircraft

Period	Obligations	
09/01/74-12/31/85	FY85: \$40,000	TOTAL: \$646,161
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Debra, D. B.	DFRF/Gilyard, G. B.	41-Aero Engr
Powell, J. D.		
Breakwell, J. V.		

**NSG 5131**                      **Stanford University**                      **1657**  
Spectroscopy of cosmic X-ray sources of the solar corona

Period	Obligations	
11/15/76-10/31/85	FY85: \$190,000	TOTAL: \$1,430,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Walker, A. B.	GSFC/Early, L. J.	13-Physics
Underwood, J. H.	GSFC/Pless, R. H.	

**NSG 7092**                      **Stanford University**                      **1658**  
Energy release in solar flares based on OSO-5 data

Period	Obligations	
10/01/74-10/30/85	FY85: \$60,000	TOTAL: \$538,499
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Petrosian, V.	HQ-EZ/Spicer, D. S.	11-Astronomy

**NAG 2-200**                      **University of California - Berkeley**                      **1659**  
Two new approaches to unanswered question about star  
formation regions

Period	Obligations	
11/01/82-10/31/84	FY85:	TOTAL: \$14,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McKee, C. F.	ARC/Haughney, L. C.	11-Astronomy
Jaffe, D.		

**NAG 2-208**                      **University of California - Berkeley**                      **1660**  
Spectroscopic observation of infrared lines normally obscured  
by atmospheric absorption

Period	Obligations	
11/01/82-10/31/85	FY85: \$102,519	TOTAL: \$274,832
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Townes, C. H.	ARC/Haughney, L. C.	11-Astronomy

**NAG 2-243**                      **University of California - Berkeley**                      **1661**  
Control systems design methodologies in a computer aided  
design environment

Period	Obligations	
10/01/83-09/30/85	FY85: \$50,000	TOTAL: \$115,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sastry, S.	ARC/Meyer, G.	49-Engr, NEC
Desoer, C.		
Polak, E.		

**NAG 2-254**                      **University of California - Berkeley**                      **1662**  
A multi-transition study of excited CO from molecular cloud cores  
with a 200 m-500 m heterodyne spectrometer

Period	Obligations	
10/01/83-02/28/86	FY85: \$113,000	TOTAL: \$158,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Betz, A. L.	ARC/Haughney, L. C.	11-Astronomy

**NAG 2-310**                      **University of California - Berkeley**                      **1663**  
Heating and distribution of the ISM in galaxies: A far-IR continuum  
evaluation of CO as a mass tracer

Period	Obligations	
10/01/84-09/30/86	FY85: \$22,000	TOTAL: \$22,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McKee, C. F.	ARC/Haughney, L. C.	54-Env Biology
Jaffe, D. T.		

**NAG 2-312**                      **University of California - Berkeley**                      **1664**  
High-resolution far-infrared spectroscopy of Herbig-Haro objects

Period	Obligations	
10/01/84-07/31/86	FY85: \$37,000	TOTAL: \$37,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cohen, M.	ARC/Haughney, L. C.	11-Astronomy

**NAG 2-321**                      **University of California - Berkeley**                      **1665**  
Evaluation and characterization of hybrid arrays

Period	Obligations	
10/01/84-10/31/85	FY85: \$80,000	TOTAL: \$80,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Arens, J. F.	ARC/McCreight, C. R.	13-Physics
Lacy, J. H.	ARC/Goebel, J. H.	

**NAG 2-338**                      **University of California - Berkeley**                      **1666**  
The effectiveness of information display systems under condi-  
tions of focused attention and long term vigilance

Period	Obligations	
01/01/85-12/31/85	FY85: \$55,359	TOTAL: \$55,359
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hardyck, C. D.	ARC/Bucher, N. M.	69-Psych, NEC

**NAG 3-131**                      **University of California - Berkeley**                      **1667**  
Numerical modeling of turbulent combustion

Period	Obligations	
11/28/80-05/31/85	FY85:	TOTAL: \$269,127
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Oppenheim, A. K.	LERC/Marek, C. J.	41-Aero Engr
Chorin, A. J.		

**NAG 3-137**                      **University of California - Berkeley**                      **1668**  
Study of jet ignition using liquid fuels

Period	Obligations	
12/08/80-12/05/84	FY85:	TOTAL: \$281,457
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Oppenheim, A. K.	LERC/Schock, H. J.	46-Mech Engr
	LERC/Willis, E. A.	

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

## **NAG 3-146 University of California - Berkeley 1669** Surface tension phenomena under low and zero gravity conditions

Period	Obligations	
01/07/81-02/27/86	FY85: \$180,000	TOTAL: \$241,964
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Concus, P.	LERC/Chai, A. T.	13-Physics
Finn, R.		
Hesseling, B.		

## **NAG 5-376 University of California - Berkeley 1676** Energetic particle and X-ray studies

Period	Obligations	
10/01/83-09/30/85	FY85: \$223,545	TOTAL: \$419,045
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Anderson, K. A.	GSFC/Wales, R. O.	31-Atmos Sci
Lin, R. P.		

## **NAG 3-443 University of California - Berkeley 1670** Fundamental study of smoldering with emphasis on experimental design for zero G

Period	Obligations	
06/30/83-11/28/85	FY85: \$60,000	TOTAL: \$110,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pagni, P. J.	LERC/Sackstader, K.	49-Engr, NEC
Fernandez-pello, A. C.		

## **NAG 5-420 University of California - Berkeley 1677** Extreme ultraviolet spectrograph design studies

Period	Obligations	
05/15/84-08/31/86	FY85: \$50,000	TOTAL: \$85,100
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bowyer, C. S.	GSFC/Osantowski, J. F.	11-Astronomy
Hettrick, M.		

## **NAG 3-624 University of California - Berkeley 1671** Investigation of turbulent flow in highly curved ducts with applications to turbomachinery components

Period	Obligations	
03/10/85-12/31/85	FY85: \$30,000	TOTAL: \$30,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Humphrey, J. A.	LERC/Wang, C. R.	41-Aero Engr
	LERC/Sockol, P. M.	

## **NAG 5-451 University of California - Berkeley 1678** Investigation of electrostatic wave generation and ion heating an evening arosal and cusp field lines

Period	Obligations	
08/01/84-07/31/85	FY85:	TOTAL: \$37,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hudson, M. K.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

## **NAG 5-69 University of California - Berkeley 1672** Eclipse coverage of selected variable and binary stars

Period	Obligations	
06/01/80-12/31/85	FY85: \$23,000	TOTAL: \$154,600
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bowyer, C. S.	GSFC/Kondo, Y.	11-Astronomy
Brodie, J. P.		
McCarthy, P.		

## **NAG 5-522 University of California - Berkeley 1679** Spatial structure and directivity of hard X ray sources in solar flares

Period	Obligations	
04/01/85-03/31/86	FY85: \$25,000	TOTAL: \$25,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Anderson, K. A.	GSFC/Bullock, G. D.	11-Astronomy
Kane, S. R.		

## **NAG 5-95 University of California - Berkeley 1673** Research relative to low noise amplifiers for radio astronomy

Period	Obligations	
09/01/80-01/31/86	FY85: \$36,000	TOTAL: \$246,556
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Welch, W. J.	GSFC/Clark, T. A.	19-Phys Sci, NEC
Backer, D. C.	GSFC/Wildes, W. T.	

## **NAG 5-576 University of California - Berkeley 1680** Chromospheric activity in solar mass pre-main sequence stars

Period	Obligations	
06/15/85-12/14/85	FY85: \$16,700	TOTAL: \$16,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Basri, G. S.	GSFC/Kondo, Y.	11-Astronomy
Imhoff, C. L.		
Giampapa, M. S.		

## **NAG 5-345 University of California - Berkeley 1674** An absorption line study of high latitude diffuses clouds

Period	Obligations	
07/15/83-09/30/84	FY85:	TOTAL: \$9,889
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Basri, G.	GSFC/Kondo, Y.	11-Astronomy

## **NAG 5-709 University of California - Berkeley 1681** Research relative to the carbon over oxygen ratios in selected planetary nebular

Period	Obligations	
09/01/85-08/31/86	FY85: \$15,300	TOTAL: \$15,300
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cohen, M.	GSFC/Kondo, Y.	12-Chemistry
Tielens, A. M.		

## **NAG 5-375 University of California - Berkeley 1675** Electric field studies

Period	Obligations	
10/01/83-09/30/85	FY85:	TOTAL: \$367,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mozer, F. S.	GSFC/Wales, R. O.	45-Elec Engr

## **NAG 6-10 University of California - Berkeley 1682** Sounding rocket research program

Period	Obligations	
11/01/80-10/31/85	FY85: \$214,249	TOTAL: \$965,249
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carlson, C. W.	GSFC/Early, L. J.	19-Phys Sci, NEC
	GSFC/Pless, R. H.	





# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

## **NAGW 681 University of California - Berkeley 1697** A directed search for laser signals at 10 UM

Period	Obligations	
11/15/84-11/14/85	FY85: \$51,500	TOTAL: \$51,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Betz, A. L.	HQ-EB/Devincenzi, D. L.	13-Physics
	HQ-EB/Rambler, M. B.	

## **NAGW 684 University of California - Berkeley 1698** Auger electron spectroscopy and electron reflection magnetometry of planetary bodies

Period	Obligations	
10/01/84-09/30/85	FY85: \$21,300	TOTAL: \$21,300
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lin, R.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/Vescelus, F.	

## **NAGW 776 University of California - Berkeley 1699** Radial diffusion of energetic electrons in Jupiter's magnetosphere

Period	Obligations	
07/15/85-07/14/86	FY85: \$23,030	TOTAL: \$23,030
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
De Pater, I.	HQ-EE/Shawhan, S. D.	13-Physics

## **NAS 1-17426 University of California - Berkeley 1700** Development tasks for long duration exposure facility (LDEF) cosmic ray detectors

Period	Obligations	
08/11/83-03/30/85	FY85: \$149,917	TOTAL: \$618,546
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Price, P. B.	LARC/O'neal, R. L.	11-Astronomy
Tarle, G.	LARC/Kinard, W. H.	

## **NAS 1-17806 University of California - Berkeley 1701** Definition of science requirements for LDEF mission II heavy nuclei collection and for the demonstration of the HNC detector performance

Period	Obligations	
09/28/84-12/31/86	FY85: \$189,295	TOTAL: \$274,607
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Price, P. B.	LARC/Jones, J. L.	11-Astronomy

## **NAS 5-20995 University of California - Berkeley 1702** Isotopic composition of primary cosmic rays H thru FE for ISEE C spacecraft

Period	Obligations	
03/19/75-09/30/83	FY85:	TOTAL: \$1,880,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Heckman, H. H.	GSFC/Wales, R. O.	13-Physics

## **NAS 5-26837 University of California - Berkeley 1703** Data analysis of HEAO-1, A 2 low energy experiment

Period	Obligations	
01/15/82-02/28/85	FY85:	TOTAL: \$96,748
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bowyer, C. S.	GSFC/Bullock, G. D.	11-Astronomy

## **NAS 5-26847 University of California - Berkeley 1704** Study of electric field instruments for the open polar plasma laboratory (PPL) and geomagnetic tail laboratory (GTL) satellites

Period	Obligations	
05/07/82-09/30/86	FY85: \$8,786	TOTAL: \$192,303
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mozer, F. S.	GSFC/O'Brien, J. J.	13-Physics

## **NAS 5-26855 University of California - Berkeley 1705** Definition study of 3-D plasma and energetic particle distribution under the OPEN (origin of plasmas in the Earth's neighborhood project)

Period	Obligations	
05/08/82-09/30/86	FY85: \$161,889	TOTAL: \$470,702
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lin, R. P.	GSFC/O'Brien, J. J.	13-Physics

## **NAS 5-26867 University of California - Berkeley 1706** Theoretical study of wave particle interaction under the OPEN project

Period	Obligations	
05/07/82-09/30/85	FY85: \$3,465	TOTAL: \$57,913
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hudson, M. K.	GSFC/O'Brien, J. J.	11-Astronomy

## **NAS 5-27377 University of California - Berkeley 1707** Analysis of the quality of image data acquired by the LANDSAT-D thematic mapper (TM)

Period	Obligations	
01/03/83-12/31/84	FY85: \$5,040	TOTAL: \$116,073
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Colwell, R. N.	GSFC/Stuart, L. M.	49-Engr, NEC
	GSFC/Oseroff, H.	

## **NAS 5-27592 University of California - Berkeley 1708** Cosmic Background Explorer (COBE) project science participation

Period	Obligations	
05/01/83-12/31/89	FY85: \$227,000	TOTAL: \$522,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smoot, G. F.	GSFC/Mather, J. C.	11-Astronomy
	GSFC/Nicholson, L. W.	

## **NAS 5-28086 University of California - Berkeley 1709** Continued st science instrument team support for faint object camera (FOC) instrument

Period	Obligations	
03/13/84-06/30/87	FY85: \$160,000	TOTAL: \$273,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
King, I.	GSFC/Leckrone, D.	11-Astronomy

## **NAS 8-32577 University of California - Berkeley 1710** Spacelab mission 1 experiment 95 far UV observations using the Faust instrument on the first Spacelab mission

Period	Obligations	
05/10/77-11/30/87	FY85: \$385,000	TOTAL: \$1,843,653
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bowyer, S.	MSFC/Jones, C. T.	31-Atmos Sci
Lampton, M.	MSFC/Eady, R.	

# **NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)**

**NASW 3575 University of California - Berkeley 1711**  
Complete positive ions, electrons and ram negative ion measurements near comet Halley

Period	Obligations	
03/15/82-09/30/86	FY85: \$162,000	TOTAL: \$610,991
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lin, R. P.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Brinton, H. C.	

**NASW 3636 University of California - Berkeley 1712**  
Conduct an extreme ultraviolet (EUV) investigation for the extreme ultraviolet Explorer (EUVE) project

Period	Obligations	
06/01/82-09/30/83	FY85:	TOTAL: \$1,395,537
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bowyer, S.	HQ-EZ/Weinreb, M.	49-Engr, NEC
	HQ-EZ/Newton, G.	

**NCA 2-21 University of California - Berkeley 1713**  
The formation and destruction of dust in the interstellar medium

Period	Obligations	
04/17/85-10/31/85	FY85: \$21,932	TOTAL: \$21,932
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McKee, C.	ARC/Hollenbach, D.	11-Astronomy

**NCA 2-37 University of California - Berkeley 1714**  
Computational techniques applicable to supercritical airfoil flow and flow at high angles of attack

Period	Obligations	
04/01/85-03/31/87	FY85: \$30,001	TOTAL: \$30,001
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Holt, M.	ARC/Chapman, G. T.	46-Mech Engr
	ARC/Malcolm, G. N.	

**NCA 2-64 University of California - Berkeley 1715**  
Evolution of magnetic molecular clouds

Period	Obligations	
08/01/85-07/31/87	FY85: \$12,000	TOTAL: \$12,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shu, F. H.	ARC/Cassen, P.	11-Astronomy

**NCA 2-67 University of California - Berkeley 1716**  
Effects of shock waves in regions of star formation (joint research interchange)

Period	Obligations	
08/01/85-07/31/87	FY85: \$12,000	TOTAL: \$12,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McKee, C.	ARC/Hollenbach, D.	11-Astronomy

**NCA 2-50204 University of California - Berkeley 1717**  
Solvent interactions with nucleic acids: Effects on structure and interactions

Period	Obligations	
01/01/82-06/30/84	FY85:	TOTAL: \$59,875
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tinoco, I.	ARC/MacElroy, R. D.	43-Chem Engr

**NCA 2-50205 University of California - Berkeley 1718**  
Determination of the amphibian dorsal-ventral axis by gravity and the hypogravity of spaceflight

Period	Obligations	
07/01/82-06/30/84	FY85:	TOTAL: \$42,158
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Thornton, J. R.	ARC/Souza, K. A.	51-Biological Sci

**NCA 2-50401 University of California - Berkeley 1719**  
Aggregation of membrane proteins

Period	Obligations	
10/01/83-09/30/85	FY85: \$36,754	TOTAL: \$70,506
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Packer, L.	ARC/MacElroy, R. D.	51-Biological Sci

**NCA 2-50402 University of California - Berkeley 1720**  
Investigation of the stability of biopolymers in pre-biotic environments determination of entropy and enthalpy of biomolecules in aqueous solution

Period	Obligations	
01/01/84-12/31/85	FY85: \$39,591	TOTAL: \$79,182
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tinoco, I.	ARC/MacElroy, R. D.	12-Chemistry
Pratt, L.		

**NCA 2-50403 University of California - Berkeley 1721**  
Optimizing the allocation of attention in pilot night vision display

Period	Obligations	
01/01/84-12/31/84	FY85:	TOTAL: \$34,462
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hardyck, C. D.	ARC/Remington, R.	69-Psych, NEC
	ARC/Voorhees, J.	

**NCA 2-50404 University of California - Berkeley 1722**  
Functional inversion of amphibian eggs by centrifugation

Period	Obligations	
07/01/84-06/30/86	FY85: \$40,089	TOTAL: \$70,089
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gerhart, J. C.	ARC/Souza, K. A.	51-Biological Sci

**NCA 2-50405 University of California - Berkeley 1723**  
Study of the composition and size distribution of interstellar grains and their influence on the heating balance and chemical composition of molecular clouds

Period	Obligations	
06/15/84-06/14/86	FY85:	TOTAL: \$72,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McKee, C.	ARC/Hollenbach, D.	11-Astronomy

**NCA 2-50406 University of California - Berkeley 1724**  
A theory of bipolar flows systems

Period	Obligations	
06/01/84-05/31/85	FY85:	TOTAL: \$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shu, F. H.	ARC/Cassen, P. M.	11-Astronomy

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NCA 2-50501 University of California - Berkeley 1725**  
 Cratering, fragmentation, and reaccrction of planetary satellites

Period	Obligations	
01/01/85-12/31/85	FY85: \$20,000	TOTAL: \$29,907
Prin. Invest.	NASA Tech. Officer	CASE Category
Shu, F. F.	ARC/Cassen, P.	11-Astronomy
	ARC/Cuzzi, J.	

**NCC 2-36 University of California - Berkeley 1726**  
 Selected target search for extra-terrestrial intelligence observations using very long base interferometry techniques and pattern recognition studies

Period	Obligations	
10/16/79-11/15/85	FY85: \$55,681	TOTAL: \$370,295
Prin. Invest.	NASA Tech. Officer	CASE Category
Shu, F.	ARC/Billingham, J.	99-Multi-Discip
Tarter, J.	ARC/Wolfe, J. H.	

**NCC 2-86 University of California - Berkeley 1727**  
 Flight management systems

Period	Obligations	
06/01/80-11/31/85	FY85: \$80,000	TOTAL: \$509,943
Prin. Invest.	NASA Tech. Officer	CASE Category
Stark, L.	ARC/Ellis, S. R.	99-Multi-Discip

**NCC 2-142 University of California - Berkeley 1728**  
 Detection, identification, and precise location of infrared objects

Period	Obligations	
07/01/81-09/30/85	FY85: \$11,000	TOTAL: \$247,845
Prin. Invest.	NASA Tech. Officer	CASE Category
Heiles, C. E.	ARC/Erickson, E. F.	11-Astronomy
Cohen, M.	ARC/Reynolds, R. T.	

**NCC 2-179 University of California - Berkeley 1729**  
 Experiments on confined separated turbulent flow

Period	Obligations	
01/01/82-12/31/85	FY85: \$23,000	TOTAL: \$133,589
Prin. Invest.	NASA Tech. Officer	CASE Category
Holt, M.	ARC/Marvin, J. G.	41-Aero Engr
Brown, J. D.	ARC/Brown, J. A.	

**NCC 2-205 University of California - Berkeley 1730**  
 Remote sensing research for agricultural applications

Period	Obligations	
08/01/82-12/31/85	FY85: \$30,000	TOTAL: \$383,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Colwell, R. N.	ARC/Lawless, J. G.	22-Computer Science
Wall, S. L.	ARC/Hlavka, C. A.	

**NCC 2-257 University of California - Berkeley 1731**  
 Control and modeling of a controlled ecology life support system (CELSS)

Period	Obligations	
07/01/83-12/31/84	FY85:	TOTAL: \$85,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Auslander, D. M.	ARC/MacElroy, R. D.	29-Math/Cmputer, NEC
Spear, R.		

**NCC 2-275 University of California - Berkeley 1732**  
 Application of fuzzy logic to systems analysis and control

Period	Obligations	
10/01/83-10/31/85	FY85: \$75,000	TOTAL: \$125,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Zadeh, L.	ARC/Lum, H.	22-Computer Science

**NCC 2-334 University of California - Berkeley 1733**  
 Streamline patterns in local separated regions

Period	Obligations	
10/01/84-10/31/85	FY85: \$20,000	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Holt, M.	ARC/Malcolm, G.	41-Aero Engr

**NCC 2-340 University of California - Berkeley 1734**  
 Understanding and controlling drag in the presence of interacting large scale flow structures

Period	Obligations	
01/01/85-01/31/86	FY85: \$17,000	TOTAL: \$17,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Humphrey, J. A.	ARC/Cantwell, E. R.	41-Aero Engr
Marcus, D. L.		

**NGL 05-003-017 University of California - Berkeley 1735**  
 Investigation of high energy solar flare radiation and trapped radiation, including balloon-borne and sounding rocket tests of prototype detectors

Period	Obligations	
04/08/63-07/31/86	FY85: \$80,000	TOTAL: \$2,422,361
Prin. Invest.	NASA Tech. Officer	CASE Category
Anderson, K. A.	HQ-EE/Behannon, K. W.	19-Phys Sci, NEC
	HQ-EE/Shawhan, S. D.	

**NGL 05-003-272 University of California - Berkeley 1736**  
 Research on radiation physics

Period	Obligations	
03/01/68-02/28/86	FY85: \$30,641	TOTAL: \$1,335,023
Prin. Invest.	NASA Tech. Officer	CASE Category
Townes, C. H.	HQ-EZ/Stencel, R. E.	11-Astronomy
Genzel, R.	HQ-EZ/Weiler, E. J.	

**NGL 05-003-497 University of California - Berkeley 1737**  
 Research in space sciences

Period	Obligations	
04/05/72-03/31/86	FY85: \$200,000	TOTAL: \$3,065,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Price, P. B.	HQ-E/Rosendhal, J. D.	13-Physics
	HQ-EP/Konkel, R. M.	

**NGR 05-003-376 University of California - Berkeley 1738**  
 High resolution studies of cosmic rays and solar particles

Period	Obligations	
04/16/71-10/31/85	FY85: \$115,000	TOTAL: \$1,436,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Price, P. B.	HQ-EZ/Ormes, J. F.	11-Astronomy
Tarle, G.	HQ-EZ/Opp, A. G.	

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NGR 05-003-450 University of California - Berkeley 1739**  
Study of X-ray emission from galactic and extragalactic sources with emphasis on soft and ultra-soft wavelengths

Period	Obligations	
05/28/71-11/30/85	FY85: \$302,300	TOTAL: \$2,541,170
Prin. Invest.	NASA Tech. Officer	CASE Category
Bowyer, C. S.	GSFC/Early, L. J.	11-Astronomy
	GSFC/Pless, R. H.	

**NGR 05-003-452 University of California - Berkeley 1740**  
Infrared spectra of planetary atmospheres

Period	Obligations	
02/18/72-06/30/85	FY85:	TOTAL: \$626,784
Prin. Invest.	NASA Tech. Officer	CASE Category
Townes, C. H.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Hillman, J. J.	

**NGR 05-003-460 University of California - Berkeley 1741**  
The chemistry of living systems

Period	Obligations	
07/21/71-10/31/85	FY85: \$87,410	TOTAL: \$1,172,549
Prin. Invest.	NASA Tech. Officer	CASE Category
Jukes, J. H.	HQ-EB/Geib, D. S.	12-Chemistry
Bush, J. W.	HQ-EB/Rambler, M. B.	

**NGR 05-003-513 University of California - Berkeley 1742**  
Heavy ion fragment experiments at the bevatron

Period	Obligations	
10/01/73-09/30/85	FY85: \$100,000	TOTAL: \$1,479,520
Prin. Invest.	NASA Tech. Officer	CASE Category
Heckman, H. H.	HQ-EZ/Ormes, J. F.	11-Astronomy
	HQ-EZ/Kaluzienski, L. J.	

**NGR 05-003-578 University of California - Berkeley 1743**  
Theoretical X-ray and gamma-ray astronomy

Period	Obligations	
08/01/73-08/31/86	FY85: \$46,732	TOTAL: \$494,443
Prin. Invest.	NASA Tech. Officer	CASE Category
Silk, J. I.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

**NGT 05-003-801 University of California - Berkeley 1744**  
NASA graduate student researchers program

Period	Obligations	
07/01/81-06/30/84	FY85:	TOTAL: \$30,440
Prin. Invest.	NASA Tech. Officer	CASE Category
Auslander, D. M.	HQ-LB/Owens, F. C.	46-Mech Engr

**NGT 05-003-802 University of California - Berkeley 1745**  
NASA graduate student researchers program

Period	Obligations	
09/01/82-05/31/84	FY85:	TOTAL: \$23,600
Prin. Invest.	NASA Tech. Officer	CASE Category
Shu, F. H.	HQ-LB/Owens, F. C.	11-Astronomy

**NGT 05-003-803 University of California - Berkeley 1746**  
NASA graduate student researchers program

Period	Obligations	
08/24/83-08/23/85	FY85:	TOTAL: \$25,936
Prin. Invest.	NASA Tech. Officer	CASE Category
Townes, C. H.	HQ-LB/Owens, F. C.	13-Physics

**NGT 05-003-804 University of California - Berkeley 1747**  
NASA graduate student researchers program

Period	Obligations	
07/01/84-06/30/86	FY85: \$18,000	TOTAL: \$33,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Phillips, T. G.	HQ-LB/Owens, F. C.	41-Aero Engr

**NGT 05-003-805 University of California - Berkeley 1748**  
NASA graduate student researchers program

Period	Obligations	
06/01/85-05/31/86	FY85: \$12,000	TOTAL: \$12,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bowyer, C. S.	HQ-LE/Owens, F. C.	11-Astronomy

**NGT 05-003-806 University of California - Berkeley 1749**  
NASA graduate student researchers program

Period	Obligations	
06/01/85-05/31/86	FY85: \$12,000	TOTAL: \$12,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bowyer, C. S.	HQ-LE/Owens, F. C.	13-Physics

**NGT 05-003-807 University of California - Berkeley 1750**  
NASA graduate student researchers program

Period	Obligations	
07/01/85-06/30/86	FY85: \$13,500	TOTAL: \$13,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Taylor, R.	HQ-LE/Owens, F. C.	44-Civil Engr

**NSG 7205 University of California - Berkeley 1751**  
Far infrared all-sky survey

Period	Obligations	
02/01/76-08/31/86	FY85: \$199,000	TOTAL: \$586,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Richards, P. L.	HQ-EZ/Boggess, N. W.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

**NSG 7336 University of California - Berkeley 1752**  
Gravity, body mass, and composition and metabolic rate

Period	Obligations	
12/01/76-11/30/85	FY85: \$60,000	TOTAL: \$633,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Pace, N.	HQ-EB/Halstead, T. W.	51-Biological Sci
Smith, A. H.		

**NAG 2-221 University of California - Davis 1753**  
Modeling pilot interaction with automated digital avionics systems

Period	Obligations	
01/01/83-12/31/85	FY85: \$43,102	TOTAL: \$124,554
Prin. Invest.	NASA Tech. Officer	CASE Category
Hess, R. A.	ARC/Nedell, B.	41-Aero Engr
	ARC/Nedell, W. F.	

**NAG 2-268 University of California - Davis 1754**  
Nonlinear compensator design via linearizing transformation

Period	Obligations	
01/01/84-10/31/85	FY85:	TOTAL: \$24,851
Prin. Invest.	NASA Tech. Officer	CASE Category
Krener, A. J.	ARC/Meyer, G.	49-Engr, NEC
Howes, F. A.		

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NAG 2-341 University of California - Davis 1755**  
The effects of hypergravic fields on neural processing of sensory thermoregulatory and vestibular systems in the rat

Period	Obligations	
03/01/85-02/28/86	FY85: \$35,563	TOTAL: \$35,563
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Horowitz, J. M.	ARC/Holton, E. M.	51-Biological Sci

**NAS 8-36550 University of California - Davis 1762**  
Airborne Doppler lidar measurements of the central California extended sea breeze

Period	Obligations	
09/20/85-09/19/87	FY85: \$50,000	TOTAL: \$50,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carroll, J. J.	MSFC/Fitzjarrald, D. E.	39-Env Sci, NEC
	MSFC/Bilbro, J.	

**NAG 2-349 University of California - Davis 1756**  
Homeostasis in primates in hyperacceleration fields

Period	Obligations	
04/01/85-10/31/85	FY85: \$25,250	TOTAL: \$25,250
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fuller, C. A.	ARC/Holton, E. M.	51-Biological Sci

**NCA 2-180302 University of California - Davis 1763**  
Anatomical and biochemical aspects of muscle hypertrophy induced by passive stretch and of muscle atrophy following removal of passive stretch: Role of soluble growth factors

Period	Obligations	
01/01/83-12/31/84	FY85:	TOTAL: \$59,088
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ashmore, C. R.	ARC/Ellis, S.	51-Biological Sci

**NAG 2-357 University of California - Davis 1757**  
Implication of privacy needs and interpersonal distancing mechanisms for space station design

Period	Obligations	
06/01/85-12/31/85	FY85: \$9,866	TOTAL: \$9,866
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Harrison, A. A.	ARC/Clearwater, Y. A.	69-Psych, NEC
Sommer, R.	ARC/Tanner, T. A.	

**NCA 2-180303 University of California - Davis 1764**  
Chemistry and cytochemistry of tripeptidyl esterase activity

Period	Obligations	
02/01/83-12/31/84	FY85:	TOTAL: \$29,988
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ashmore, C. R.	ARC/Ellis, S.	51-Biological Sci

**NAG 5-217 University of California - Davis 1758**  
Remote sensing of the coastal ocean and a large lake basin

Period	Obligations	
01/15/82-12/31/84	FY85:	TOTAL: \$166,852
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Powell, T.	GSFC/Rao, D. B.	33-Oceanography

**NCC 2-99 University of California - Davis 1765**  
Selection of crop varieties for efficient production using urea, ammonia, nitrite, and nitrate in the closed environmental life support system

Period	Obligations	
10/01/80-11/30/85	FY85: \$70,127	TOTAL: \$351,440
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Huffaker, R. C.	ARC/MacElroy, R. D.	55-Agriculture Sci
Rains, D. W.		
Qualset, C. O.		

**NAG 8-501 University of California - Davis 1759**  
X-ray images of three small diameter supernova remnants

Period	Obligations	
12/01/84-11/30/85	FY85: \$14,564	TOTAL: \$14,564
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Becker, R. H.	MSFC/Johnson, W. G.	11-Astronomy

**NCC 2-186 University of California - Davis 1766**  
Reynolds-stress model for compressible flows

Period	Obligations	
04/01/82-04/30/86	FY85: \$20,977	TOTAL: \$107,288
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kollmann, W.	ARC/Rubesin, M. W.	41-Aero Engr
Minh, H. H.	ARC/Viegas, J. R.	
Vandromme, D.		

**NAS 5-27577 University of California - Davis 1760**  
LANDSAT-D thematic mapper image dimensionality reduction and geometric correction accuracy

Period	Obligations	
03/03/83-01/02/85	FY85:	TOTAL: \$60,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ford, G. E.	GSFC/Oseroff, H.	49-Engr, NEC

**NCC 2-241 University of California - Davis 1767**  
Identification of pilot describing functions from flight test and simulation data

Period	Obligations	
04/01/83-04/30/86	FY85: \$9,999	TOTAL: \$54,252
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hess, R. A.	ARC/Berry, D. T.	41-Aero Engr

**NAS 5-28754 University of California - Davis 1761**  
Application in LANDSAT images to analyze kinetics at the intersection of the Fault zones in California (integration of data and fields study)

Period	Obligations	
08/15/85-12/14/87	FY85: \$193,404	TOTAL: \$193,404
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Finnerty, A. A.	GSFC/Oseroff, H.	32-Geological Sci
Verosub, K.		

**NCC 2-252 University of California - Davis 1768**  
Numerical and experimental studies of particle flow in a high-pressure boundary layer wind tunnel

Period	Obligations	
06/15/83-07/14/86	FY85: \$9,000	TOTAL: \$23,875
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
White, B. R.	ARC/Pollack, J. B.	32-Geological Sci
	ARC/Smith, B. F.	

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NCC 2-264 University of California - Davis 1769**  
Differences in interfacial bond strengths of graphite fiber-epoxy resin composites

<i>Period</i>	<i>Obligations</i>	
08/01/83-01/31/85	FY85:	TOTAL: \$18,408
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Needles, H. L.	ARC/Cagliostro, D. E.	43-Chem Engr

**NCC 2-285 University of California - Davis 1770**  
Manual control of rotary and fixed wing aircraft in steep turning flight

<i>Period</i>	<i>Obligations</i>	
10/01/83-10/31/86	FY85: \$40,339	TOTAL: \$60,339
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hess, R.	ARC/Franklin, J. A.	41-Aero Engr

**NCC 2-331 University of California - Davis 1771**  
Computer simulation of impregnation hydrodynamics

<i>Period</i>	<i>Obligations</i>	
10/15/84-12/31/85	FY85: \$49,390	TOTAL: \$49,390
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Higgins, B. G.	ARC/Cagliostro, D. E.	43-Chem Engr

**NGT 05-004-801 University of California - Davis 1772**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
07/01/83-06/30/86	FY85: \$17,000	TOTAL: \$42,350
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bernaer, E.	HQ-LB/Owens, F. C.	51-Biological Sci

**NSG 2234 University of California - Davis 1773**  
Thermoregulation in rats: Effects of hypergravity and norepinephrine

<i>Period</i>	<i>Obligations</i>	
07/01/77-03/31/85	FY85:	TOTAL: \$185,101
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Horowitz, J. M.	HQ-EB/Halstead, T. W.	51-Biological Sci
Horowitz, B. A.		

**NAG 1-606 University of California - Irvine 1774**  
Detection of faults and software reliability analysis

<i>Period</i>	<i>Obligations</i>	
07/01/85-06/30/86	FY85: \$29,336	TOTAL: \$29,336
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Leveson, N. G.	LARC/Migneault, G. E.	22-Computer Science

**NAG 2-288 University of California - Irvine 1775**  
Brain-gut interaction in motion sickness: Anatomical and physiological studies in cat

<i>Period</i>	<i>Obligations</i>	
03/01/84-02/28/86	FY85: \$65,000	TOTAL: \$130,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Blanks, R. H.	ARC/Daunton, N. G.	51-Biological Sci
Mason, G. R.	ARC/Corcoran, M. L.	

**NAG 3-176 University of California - Irvine 1776**  
Effect of liquid droplets on turbulence structure in a round gaseous jet

<i>Period</i>	<i>Obligations</i>	
06/01/81-12/31/84	FY85:	TOTAL: \$149,782
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Elghobashi, S.	LERC/Tacina, R. R.	46-Mech Engr

**NAG 3-250 University of California - Irvine 1777**  
Interactions of electromagnetic radiation with surface polaritons

<i>Period</i>	<i>Obligations</i>	
01/06/82-01/02/86	FY85: \$34,799	TOTAL: \$167,687
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mills, D. L.	LERC/Arrison, A.	13-Physics

**NAG 3-524 University of California - Irvine 1778**  
Spectroscopic studies of surface plasmons and other SEW's

<i>Period</i>	<i>Obligations</i>	
02/15/84-11/14/85	FY85: \$55,000	TOTAL: \$91,150
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rutledge, J. E.	LERC/Arrison, A.	13-Physics

**NAG 3-627 University of California - Irvine 1779**  
Ignition and flame speed above liquid fuel pools gravity effects

<i>Period</i>	<i>Obligations</i>	
03/01/85-12/01/85	FY85: \$45,757	TOTAL: \$45,757
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sirignano, W. A.	LERC/Sacksteder, K.	49-Engr, NEC

**NAG 5-507 University of California - Irvine 1780**  
Coronal dynamics

<i>Period</i>	<i>Obligations</i>	
03/01/85-02/28/86	FY85: \$40,000	TOTAL: \$40,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Steinolfson, R. S.	GSFC/Bullock, G. D.	13-Physics

**NAGW 93 University of California - Irvine 1781**  
Research in solar plasma theory

<i>Period</i>	<i>Obligations</i>	
06/01/80-05/31/86	FY85: \$165,380	TOTAL: \$675,829
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hoven, G. V.	HQ-EE/Butler, D. M.	13-Physics
Steinolfson, R. S.	HQ-EE/Birmingham, T. J.	

**NAGW 212 University of California - Irvine 1782**  
Models of energy transformation during the early evolution of life

<i>Period</i>	<i>Obligations</i>	
06/01/81-11/30/85	FY85: \$77,570	TOTAL: \$338,326
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lanyi, T. K.	HQ-EB/Devincenzi, D. L.	51-Biological Sci
	HQ-EB/Rambler, M.	

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NAGW 452 University of California - Irvine 1783**  
 Latitudinal gradients in tropospheric concentrations of selected  
 halocarbons and hydrocarbons

Period	Obligations
03/15/83-03/14/86	FY85: \$138,902 TOTAL: \$391,250
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Rowland, F. S.	HQ-EE/Smith, M. A. 31-Atmos Sci
	HQ-EE/Demore, W. B.

**NAG 1-267 University of California - Los Angeles 1790**  
 Molecular beam epitaxy grown silicon-silicon germanium layered  
 structures

Period	Obligations
05/01/82-12/31/84	FY85: TOTAL: \$141,980
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Allen, F. G.	LARC/Fripp, A. L. 45-Elec Engr
Pan, D. S.	LARC/Crouch, R. K.

**NAGW 467 University of California - Irvine 1784**  
 Ultraviolet photolysis of ions of stratospheric importance

Period	Obligations
06/01/83-05/31/84	FY85: TOTAL: \$85,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Rowland, F. S.	HQ-EE/Watson, R. T. 31-Atmos Sci
	HQ-EE/Hilsenrath, E.

**NAG 1-270 University of California - Los Angeles 1791**  
 Numerical methods for compressible flow calculations

Period	Obligations
05/15/82-02/28/86	FY85: \$38,500 TOTAL: \$116,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Osher, S. J.	LARC/Rudy, D. H. 41-Aero Engr
	LARC/Dwoyer, D. L.

**NAGW 668 University of California - Irvine 1785**  
 Ultraviolet photolysis of ions of stratospheric importance

Period	Obligations
10/01/84-09/30/85	FY85: \$95,000 TOTAL: \$95,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Rowland, F. S.	HQ-EE/Hampson, R. F. 31-Atmos Sci
	HQ-EE/Demore, W. B.

**NAG 1-273 University of California - Los Angeles 1792**  
 Numerical solution of the full potential equation

Period	Obligations
06/30/82-09/30/84	FY85: TOTAL: \$108,158
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Osher, S. J.	LARC/Whitlow, W., Jr. 41-Aero Engr
Engquist, B. E.	LARC/Bland, S. R.

**NAS 2-10522 University of California - Irvine 1786**  
 Life science experiment ARC 781-127, effect of zero-gravity on  
 biochemical and metabolic properties of skeletal muscle

Period	Obligations
01/15/80-09/30/85	FY85: \$73,521 TOTAL: \$211,777
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Baldwin, K. M.	ARC/Ferandin, J. A. 51-Biological Sci
	ARC/Sebesta, P. D.

**NAG 1-464 University of California - Los Angeles 1793**  
 Control laws for distributed parameter systems

Period	Obligations
03/15/84-03/14/86	FY85: \$34,999 TOTAL: \$75,582
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Balakrishnan, A. V.	LARC/Joshi, S. M. 45-Elec Engr
	LARC/Taylor, L. W., Jr.

**NCA 2-5 University of California - Irvine 1787**  
 Evaluation of retinal design principles for image sampling and  
 processing

Period	Obligations
03/01/85-02/28/87	FY85: \$30,000 TOTAL: \$30,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Yellott, J. I.	ARC/Ahumada, A. J., Jr. 69-Psych, NEC
	ARC/Nagel, D. C.

**NAG 1-506 University of California - Los Angeles 1794**  
 Numerical solution of the unsteady Navier-Stokes equation

Period	Obligations
10/01/84-09/30/85	FY85: TOTAL: \$56,425
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Osher, S. J.	LARC/Whitlow, W., Jr. 41-Aero Engr
Engquist, B. E.	LARC/Bland, S. R.

**NCA 2-345301 University of California - Irvine 1788**  
 Mathematical characterization and display application of quasi-  
 random image sampling systems

Period	Obligations
01/01/83-12/31/84	FY85: TOTAL: \$46,417
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Yellott, J. I.	ARC/Ahumada, A. J., Jr. 69-Psych, NEC
	ARC/Nagel, D. C.

**NAG 1-512 University of California - Los Angeles 1795**  
 Second generation experiment in Fault tolerant software

Period	Obligations
09/01/84-09/30/85	FY85: \$43,835 TOTAL: \$123,835
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Avizienis, A.	LARC/Eckhardt, D. E., Jr.
Kelly, J. P.	22-Computer Science

**NSG 7375 University of California - Irvine 1789**  
 Coronal plasma structures

Period	Obligations
06/01/77-10/31/85	FY85: \$65,300 TOTAL: \$406,364
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Van Hoven, G	HQ-EZ/Spicer, D. S. 13-Physics

**NAG 2-209 University of California - Los Angeles 1796**  
 Unsteady aerodynamics for finite-time arbitrary motion of rotor  
 blades in frequency and time domain

Period	Obligations
09/01/82-07/31/87	FY85: \$111,300 TOTAL: \$229,248
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Friedmann, P. P.	ARC/Warmbrodt, W. 41-Aero Engr
	ARC/Jacklin, S.



**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAG 2-216 University of California - Los Angeles 1797**  
Model-based approaches for partitioning subjective workload assessments

Period	Obligations
01/01/83-06/30/85	FY85: \$18,000 TOTAL: \$72,000
Prin. Invest.	NASA Tech. Officer CASE Category
Lyman, D. J.	ARC/Hart, S. G. 69-Psych, NEC

**NAG 2-226 University of California - Los Angeles 1798**  
Optimal design of rotor blade for vibration reduction in forward flight

Period	Obligations
03/01/83-10/31/85	FY85: \$22,000 TOTAL: \$108,000
Prin. Invest.	NASA Tech. Officer CASE Category
Friedmann, P. P.	ARC/Miura, H. 41-Aero Engr
	ARC/Gelhausen, P. A.

**NAG 2-302 University of California - Los Angeles 1799**  
Ai-based real-time support for high performance aircraft operations

Period	Obligations
05/15/84-05/14/86	FY85: \$50,000 TOTAL: \$100,000
Prin. Invest.	NASA Tech. Officer CASE Category
Vidal, J. J.	ARC/Duke, E. L. 41-Aero Engr

**NAG 2-303 University of California - Los Angeles 1800**  
Survey and analysis of x-band radar for flight research in the western aeronautical test range

Period	Obligations
07/01/84-06/30/86	FY85: \$46,908 TOTAL: \$93,183
Prin. Invest.	NASA Tech. Officer CASE Category
Levan, N.	ARC/Anderson, K. F. 29-Math/Cmputer,NEC
Balakrishnan, A.	
V./Shigemoto, F.	

**NAG 2-304 University of California - Los Angeles 1801**  
A survey of the state of the art and focused research in range systems

Period	Obligations
06/15/84-06/14/86	FY85: \$90,000 TOTAL: \$150,000
Prin. Invest.	NASA Tech. Officer CASE Category
Omura, J. K.	ARC/Anderson, K. F.
Yao, K.	29-Math/Cmputer,NEC
Baker, R. L.	

**NAG 2-313 University of California - Los Angeles 1802**  
SIRTF pre-definition phase analyses

Period	Obligations
07/01/84-10/31/85	FY85: \$27,250 TOTAL: \$27,250
Prin. Invest.	NASA Tech. Officer CASE Category
Jura, M. A.	ARC/Ramos, R. 11-Astronomy
	ARC/Thorley, G.

**NAG 2-315 University of California - Los Angeles 1803**  
A SIRTF interdisciplinary scientist proposal for pre-definition phase

Period	Obligations
07/01/84-10/31/85	FY85: \$31,369 TOTAL: \$31,369
Prin. Invest.	NASA Tech. Officer CASE Category
Wright, E. L.	ARC/Ramos, R. 11-Astronomy
	ARC/Thorley, G.

**NAG 2-353 University of California - Los Angeles 1804**  
Dynamic insulation systems

Period	Obligations
06/01/85-09/30/85	FY85: \$5,000 TOTAL: \$5,000
Prin. Invest.	NASA Tech. Officer CASE Category
Frederking, T. H.	ARC/Kittel, P. 46-Mech Engr

**NAG 2-367 University of California - Los Angeles 1805**  
Discrete event control and communications systems

Period	Obligations
09/01/85-08/31/86	FY85: \$100,000 TOTAL: \$100,000
Prin. Invest.	NASA Tech. Officer CASE Category
Balakrishnan, A. V.	ARC/Anderson, K. F. 29-Math/Cmputer,NEC
Kleinrock, L.	ARC/Moore, A. L.

**NAG 3-358 University of California - Los Angeles 1806**  
A data flow multiprocessor for highspeed digital simulation

Period	Obligations
11/25/82-02/24/85	FY85: TOTAL: \$140,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ercegovac, M. D.	LERC/Milner, E. J. 22-Computer Science
Karplus, W. J.	LERC/Szuch, J. R.

**NAG 3-451 University of California - Los Angeles 1807**  
Thin film temperature sensor

Period	Obligations
08/01/83-12/30/86	FY85: \$100,000 TOTAL: \$217,448
Prin. Invest.	NASA Tech. Officer CASE Category
Bunshah, R. F.	LERC/Holanda, R. 47-Materials Engr
	LERC/Englund, D. R.

**NAG 3-543 University of California - Los Angeles 1808**  
Analytical and experimental modelling of a transverse jet

Period	Obligations
04/01/84-04/30/85	FY85: TOTAL: \$30,718
Prin. Invest.	NASA Tech. Officer CASE Category
Karagozian, A. R.	LERC/Holdeman, J. D. 41-Aero Engr

**NAG 5-152 University of California - Los Angeles 1809**  
Thermal isotacy in the world's oceans

Period	Obligations
04/01/81-08/31/86	FY85: \$60,000 TOTAL: \$212,488
Prin. Invest.	NASA Tech. Officer CASE Category
Schubert, G.	GSFC/Welker, J. 32-Geological Sci

**NAG 5-317 University of California - Los Angeles 1810**  
Analysis of satellite-to-satellite range-rate data

Period	Obligations
05/15/83-12/31/85	FY85: TOTAL: \$61,161
Prin. Invest.	NASA Tech. Officer CASE Category
Schubert, G.	GSFC/Welker, J. E. 32-Geological Sci

**NAG 5-447 University of California - Los Angeles 1811**  
Tectonic deformation in California

Period	Obligations
07/15/84-07/14/86	FY85: \$30,000 TOTAL: \$79,850
Prin. Invest.	NASA Tech. Officer CASE Category
Bird, P.	GSFC/Mead, G. D. 32-Geological Sci

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

## **NAG 5-474 University of California - Los Angeles 1812** Study of field-aligned currents observed at high and low altitudes

Period	Obligations
10/01/84-09/30/85	FY85: TOTAL: \$33,793
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Elphic, R. C.	GSFC/Bullock, G. D. 19-Phys Sci, NEC
Russell, C. T.	GSFC/Hoffman, R. A.

## **NAG 5-488 University of California - Los Angeles 1813** A theoretical investigation of auroral dynamics

Period	Obligations
03/01/85-02/28/86	FY85: \$138,900 TOTAL: \$138,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Maggs, J. E.	GSFC/Bullock, G. D. 19-Phys Sci, NEC
	GSFC/Hoffman, R. A.

## **NAG 5-536 University of California - Los Angeles 1814** Magnetospheric studies using the United Kingdom satellite data

Period	Obligations
05/15/85-05/14/86	FY85: \$30,000 TOTAL: \$30,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Russell, C. T.	GSFC/Acuna, M. H. 13-Physics
Walker, R. J.	GSFC/Ousley, G. W.
Kivelson, M. G.	

## **NAG 5-566 University of California - Los Angeles 1815** Magnetosheath flows and flux transfer events

Period	Obligations
07/01/85-06/30/86	FY85: \$48,709 TOTAL: \$48,709
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Crooker, N.	GSFC/Wales, R. O. 11-Astronomy

## **NAG 5-575 University of California - Los Angeles 1816** Coordinated ultraviolet optical infrared observations of quasars

Period	Obligations
07/01/85-02/28/86	FY85: \$29,900 TOTAL: \$29,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Malkan, M. A.	GSFC/Kondo, Y. 11-Astronomy

## **NAG 5-710 University of California - Los Angeles 1817** Research relative to a model of the orion nebula

Period	Obligations
09/01/85-08/31/86	FY85: \$12,000 TOTAL: \$12,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Zuckerman, B. M.	GSFC/Kondo, Y. 11-Astronomy

## **NAG 5-713 University of California - Los Angeles 1818** Estimation theory satellite data assimilation and atmospheric predictability

Period	Obligations
09/15/85-11/14/85	FY85: \$30,000 TOTAL: \$30,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Ghil, M.	GSFC/Kalnay, E. 31-Atmos Sci

## **NAG 9-15 University of California - Los Angeles 1819** Eu neutron capture, regolith dynamics and lunar stratigraphy

Period	Obligations
02/01/81-01/31/84	FY85: TOTAL: \$48,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Depaolo, D. J.	JSC/Dietrich, J. W. 99-Multi-Discip

## **NAG 9-27 University of California - Los Angeles 1820** Isotopic analysis of light elements in extraterrestrial materials

Period	Obligations
02/01/83-01/31/86	FY85: \$46,000 TOTAL: \$141,776
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Kerridge, J. F.	JSC/Browne, I. D. 12-Chemistry
Kaplan, I. R.	

## **NAG 9-40 University of California - Los Angeles 1821** Geochemical studies of lunar materials

Period	Obligations
02/01/83-02/01/86	FY85: \$147,500 TOTAL: \$457,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Wasson, J. T.	JSC/Browne, I. D. 32-Geological Sci
Grossman, J. M.	
Rubin, A. E.	

## **NAG 9-70 University of California - Los Angeles 1822** Nd isotopic evolution of the Archean mantle

Period	Obligations
02/01/84-02/01/86	FY85: TOTAL: \$27,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Depaolo, D. J.	JSC/Phinney, W. C. 32-Geological Sci

## **NAG 9-76 University of California - Los Angeles 1823** Early evolution of Earth and Venus crusts

Period	Obligations
02/01/84-01/31/86	FY85: \$18,000 TOTAL: \$48,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Kaula, W. M.	JSC/Phinney, W. C. 32-Geological Sci
Schubert, G.	
Depaolo, D. J.	

## **NAG 9-87 University of California - Los Angeles 1824** Pristine lunar rocks and the genesis of early planetary crusts

Period	Obligations
05/01/85-03/31/86	FY85: \$75,000 TOTAL: \$150,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Wasson, J. T.	JSC/Browne, I. D. 19-Phys Sci, NEC
Warren, P. H.	
Kallemeyn, G. W.	

## **NAG 9-96 University of California - Los Angeles 1825** Primordial planetary differentiation and its after effects

Period	Obligations
03/01/85-03/01/86	FY85: \$18,000 TOTAL: \$18,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Wasson, J. T.	JSC/Phinney, W. C. 32-Geological Sci
Warren, P. H.	

## **NAGW 78 University of California - Los Angeles 1826** Space plasma physics theory and simulation

Period	Obligations
07/01/80-05/31/86	FY85: \$254,733 TOTAL: \$1,306,314
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Abdulla, M. A.	HQ-EE/Butler, D. M. 39-Env Sci, NEC
	HQ-EE/Hudson, R. D.

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAGW 80 University of California - Los Angeles 1827**  
Theoretical studies of extragalactic grains

Period	Obligations	
10/01/80-09/30/86	FY85: \$28,844	TOTAL: \$184,194
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Jura, M. A.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

**NAGW 87 University of California - Los Angeles 1828**  
Theoretical studies of the plasma environments of Jupiter and Saturn, their magnetospheres and their satellites

Period	Obligations	
07/01/80-12/31/85	FY85: \$60,096	TOTAL: \$281,287
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Siscoe, G. L.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 104 University of California - Los Angeles 1829**  
High-pressure cosmochemistry applied to major planetary interiors: Experimental studies

Period	Obligations	
11/01/80-12/31/85	FY85: \$65,064	TOTAL: \$296,551
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nicol, M. F.	HQ-EL/Boyce, J. M.	11-Astronomy
	HQ-EL/Holt, H. E.	

**NAGW 162 University of California - Los Angeles 1830**  
Studies of the Jovian magnetopause and boundary layer

Period	Obligations	
04/01/81-09/30/85	FY85: \$42,605	TOTAL: \$138,605
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Walker, R. J.	HQ-EE/Lynch, J. T.	13-Physics
Kivelson, M.	HQ-EE/Evans, N.	

**NAGW 180 University of California - Los Angeles 1831**  
Turbulence in plasma with magnetic null points

Period	Obligations	
04/01/81-03/31/84	FY85:	TOTAL: \$155,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stenzel, R. L.	HQ-EE/Lynch, J. T.	13-Physics
	HQ-EE/Wiskerchen, M. J.	

**NAGW 347 University of California - Los Angeles 1832**  
Isotopic characteristics of prebiotic synthesis of organic matter

Period	Obligations	
07/01/82-12/31/85	FY85: \$37,150	TOTAL: \$161,459
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kerridge, J. F.	HQ-EB/Devincenzi, D. L.	12-Chemistry
	HQ-EB/Rambler, M. B.	

**NAGW 472 University of California - Los Angeles 1833**  
Theoretical studies in Lyport of a solar seismology mission

Period	Obligations	
06/01/83-10/31/85	FY85: \$75,000	TOTAL: \$191,168
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ulrich, R.	HQ-EZ/Bohlin, J. D.	13-Physics
	HQ-EZ/Spicer, D. S.	

**NAGW 676 University of California - Los Angeles 1834**  
Enhanced tidal heating around IO's volcanoes, mountains, and fissures, March 1984

Period	Obligations	
11/01/84-10/31/85	FY85: \$25,000	TOTAL: \$25,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schubert, G.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAGW 692 University of California - Los Angeles 1835**  
Pioneer Venus data analysis and quest investigator program

Period	Obligations	
01/01/85-12/31/85	FY85: \$35,378	TOTAL: \$35,378
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Luhmann, J. G.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W.	

**NAGW 717 University of California - Los Angeles 1836**  
Investigation of interplanetary flux enhancement 3 and their possible association with outgassing small bodies in the inner solar system

Period	Obligations	
04/01/85-03/31/86	FY85: \$67,000	TOTAL: \$67,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Russell, C. T.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 774 University of California - Los Angeles 1837**  
Vertical propagation of gravity wave energy and its interaction with the mean flow in the middle atmosphere

Period	Obligations	
06/01/85-05/31/86	FY85: \$64,397	TOTAL: \$64,397
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wurtele, M. G.	HQ-EE/Smith, M. H.	31-Atmos Sci
	HQ-EE/Butler, D. M.	

**NAS 1-16674 University of California - Los Angeles 1838**  
Stratospheric calibration of the quartz crystal microbalance (QCM)

Period	Obligations	
05/26/81-09/30/84	FY85:	TOTAL: \$41,062
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Friedlander, S. K.	LARC/Woods, D. C.	31-Atmos Sci
Hering, S. V.		

**NAS 2-9491 University of California - Los Angeles 1839**  
Pioneer Venus data analysis of magnetic fields experiment

Period	Obligations	
08/01/77-09/30/85	FY85: \$340,000	TOTAL: \$2,058,084
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Russell, C. T.	ARC/Fimmel, R. O.	31-Atmos Sci
	ARC/Craig, R. A.	

**NAS 5-25039 University of California - Los Angeles 1840**  
Theory formulation and analysis support for the Dynamics Explorer (DE) project

Period	Obligations	
08/08/78-03/31/85	FY85:	TOTAL: \$310,089
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Maggs, J. E.	GSFC/Bullock, G. D.	13-Physics

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NAS 5-25657 University of California - Los Angeles 1841**  
 Space telescope/high resolution spectrograph interstellar medium studies

Period	Obligations
04/25/79-01/31/87	FY85: TOTAL: \$25,974
Prin. Invest.	NASA Tech. Officer CASE Category
Jura, M. A.	GSFC/Vitagliano, H. D. 11-Astronomy

**NAS 5-27670 University of California - Los Angeles 1848**  
 Data analysis studies and algorithm development for the COBE satellite

Period	Obligations
06/28/83-12/31/89	FY85: \$100,000 TOTAL: \$245,000
Prin. Invest.	NASA Tech. Officer CASE Category
Wright, E. L.	GSFC/Mather, J. C. 11-Astronomy

**NAS 5-25772 University of California - Los Angeles 1842**  
 International Sun-Earth Explorers A and B data reduction and analysis for the magnetic field investigation

Period	Obligations
11/01/79-09/30/84	FY85: TOTAL: \$1,662,332
Prin. Invest.	NASA Tech. Officer CASE Category
Russell, C. T.	GSFC/Wales, R. O. 11-Astronomy

**NAS 5-28448 University of California - Los Angeles 1849**  
 Data reduction and analysis for the ISEE 1 and 2 spacecraft's magnetometer experiment magnetometer

Period	Obligations
10/01/84-09/30/85	FY85: \$479,278 TOTAL: \$479,278
Prin. Invest.	NASA Tech. Officer CASE Category
Russell, C. T.	GSFC/Wales, R. O. 31-Atmos Sci

**NAS 5-26846 University of California - Los Angeles 1843**  
 Magnetic field investigation for the polar plasma laboratory of the origin of plasmas in the Earth's neighborhood mission

Period	Obligations
06/11/82-09/30/86	FY85: \$15,290 TOTAL: \$121,263
Prin. Invest.	NASA Tech. Officer CASE Category
Russell, C. T.	GSFC/O'brien, J. J. 19-Phys Sci, NEC

**NCA 2-33 University of California - Los Angeles 1850**  
 Elemental abundances and stable isotopes in stromatolites

Period	Obligations
06/01/85-05/31/87	FY85: \$22,000 TOTAL: \$22,000
Prin. Invest.	NASA Tech. Officer CASE Category
Schopf, J. W.	ARC/Des Marais, D. J. 19-Phys Sci, NEC

**NAS 5-26852 University of California - Los Angeles 1844**  
 A magnetic field investigation for the equatorial magnetospheric laboratory

Period	Obligations
06/11/82-09/30/86	FY85: \$15,367 TOTAL: \$116,963
Prin. Invest.	NASA Tech. Officer CASE Category
McPherron, R. L.	GSFC/O'brien, J. J. 13-Physics

**NCA 2-390401 University of California - Los Angeles 1851**  
 Cosmological studies using faint galaxies seen by the large deployable reflector

Period	Obligations
11/01/83-08/31/84	FY85: TOTAL: \$2,597
Prin. Invest.	NASA Tech. Officer CASE Category
Wright, E.	ARC/Hollenbach, D. J. 11-Astronomy

**NAS 5-26871 University of California - Los Angeles 1845**  
 Development of theoretical technology for origin of plasmas in the Earth's neighborhood (OPEN)

Period	Obligations
05/03/82-09/30/86	FY85: \$17,815 TOTAL: \$73,914
Prin. Invest.	NASA Tech. Officer CASE Category
Ashour-abdalla G. M.	GSFC/O'brien, J. J. 13-Physics

**NCA 2-390402 University of California - Los Angeles 1852**  
 Leaf-area index studies of Sequoia national park conifers

Period	Obligations
05/01/84-04/30/85	FY85: TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer CASE Category
Rundel, P. W.	ARC/Peterson, D. L. 39-Env Sci, NEC

**NAS 5-26895 University of California - Los Angeles 1846**  
 Investigation southern California tectonic deformation

Period	Obligations
04/02/82-06/01/84	FY85: TOTAL: \$91,544
Prin. Invest.	NASA Tech. Officer CASE Category
Jackson, D. D.	GSFC/Mead, G. D. 32-Geological Sci
Davis, P. M.	

**NCA 2-390403 University of California - Los Angeles 1853**  
 Development of efficient and highly accurate shock capturing schemes with stable and accurate numerical boundary conditions

Period	Obligations
05/01/84-04/30/86	FY85: \$21,000 TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer CASE Category
Osher, S.	ARC/Warming, R. 21-Mathematics
Engquist, B.	ARC/Yee, H.
Harten, A.	

**NAS 5-26957 University of California - Los Angeles 1847**  
 Testing of hypotheses in crustal dynamics using very long baseline interferometry (VLBI) and satellite laser ranging (SLR) data from California

Period	Obligations
05/07/82-08/07/84	FY85: TOTAL: \$37,537
Prin. Invest.	NASA Tech. Officer CASE Category
Bird, G. P.	GSFC/Mead, G. D. 32-Geological Sci

**NCA 2-390404 University of California - Los Angeles 1854**  
 Studies of the dynamics microphysics, and radiation transport in gaseous nebulae

Period	Obligations
07/15/84-07/14/86	FY85: \$58,898 TOTAL: \$79,689
Prin. Invest.	NASA Tech. Officer CASE Category
Zuckerman, B.	ARC/Caroff, L. 11-Astronomy
	ARC/Erickson, E.

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NCA 2-390501 University of California - Los Angeles 1855**  
Connective tissue response to hind limb suspension in rats

Period	Obligations	
10/01/84-09/30/86	FY85: \$25,000	TOTAL: \$28,366
Prin. Invest.	NASA Tech. Officer	CASE Category
Vailas, A. C.	ARC/Grindeland, R. E.	51-Biological Sci
Edgerton, V. R.		
Roy, R. R.		

**NCA 2-390502 University of California - Los Angeles 1856**  
Etiology of tissue changes in rat muscle in response to hind limb suspension

Period	Obligations	
10/01/84-09/30/86	FY85: \$35,000	TOTAL: \$46,855
Prin. Invest.	NASA Tech. Officer	CASE Category
Edgerton, V. R.	ARC/Grindeland, R. E.	51-Biological Sci
Roy, R. R.		
Vailas, A. C.		

**NCC 2-292 University of California - Los Angeles 1857**  
Applicability of rat tail suspension as a model for muscle atrophy in a zero-gravity environment

Period	Obligations	
03/01/84-09/30/84	FY85:	TOTAL: \$23,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Edgerton, V. R.	ARC/Grindeland, R. E.	56-Medical Sciences
Roy, R. R.		
Vailis, A.		

**NCC 2-305 University of California - Los Angeles 1858**  
Separator plugs for liquid helium

Period	Obligations	
06/01/84-09/30/84	FY85:	TOTAL: \$5,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Frederking, T. H.	ARC/Lee, J. M.	13-Physics
	ARC/Kittel, P.	

**NGL 05-007-002 University of California - Los Angeles 1859**  
Theoretical evaluation of the internal structures and atmospheres of planets and the Moon

Period	Obligations	
01/01/62-08/31/86	FY85: \$21,000	TOTAL: \$1,146,725
Prin. Invest.	NASA Tech. Officer	CASE Category
Kaula, W. M.	HQ-EL/Scott, D. H.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NGL 05-007-004 University of California - Los Angeles 1860**  
Theoretical and experimental investigations of particles and fields in space, including construction of prototype instrumentation

Period	Obligations	
03/01/62-09/30/85	FY85: \$253,382	TOTAL: \$3,912,856
Prin. Invest.	NASA Tech. Officer	CASE Category
Coleman, P. J., Jr.	HQ-EE/Lynch, J. T.	39-Env Sci, NEC
	HQ-EE/Shawhan, S. D.	

**NGL 05-007-190 University of California - Los Angeles 1861**  
Theoretical space plasma physics

Period	Obligations	
06/27/68-10/31/85	FY85: \$150,000	TOTAL: \$1,270,046
Prin. Invest.	NASA Tech. Officer	CASE Category
Kennel, C. F.	HQ-EE/Lynch, J. T.	19-Phys Sci, NEC
	HQ-EE/Shawhan, S. D.	

**NGR 05-007-221 University of California - Los Angeles 1862**  
Nature and changes of organic matter in deep ocean cores

Period	Obligations	
08/08/69-12/31/85	FY85: \$89,800	TOTAL: \$1,086,793
Prin. Invest.	NASA Tech. Officer	CASE Category
Bikle, D. D.	HQ-EB/Devincenzi, D. L.	32-Geological Sci
	HQ-EB/Rambler, M. B.	

**NGR 05-007-329 University of California - Los Angeles 1863**  
Elemental variations in genetically related meteorites

Period	Obligations	
04/27/71-08/31/84	FY85:	TOTAL: \$737,952
Prin. Invest.	NASA Tech. Officer	CASE Category
Wasson, J. T.	HQ-EL/French, B. M.	32-Geological Sci
	HQ-EL/Quaide, W. L.	

**NGR 05-007-407 University of California - Los Angeles 1864**  
Paleobiologic studies of the antiquity and Precambrian evolution of life

Period	Obligations	
04/10/73-12/31/85	FY85: \$61,457	TOTAL: \$500,624
Prin. Invest.	NASA Tech. Officer	CASE Category
Schopf, J. W.	HQ-EB/Devincenzi, D. L.	32-Geological Sci
	HQ-EB/Rambler, M. B.	

**NGT 05-006-800 University of California - Los Angeles 1865**  
NASA graduate student researchers program

Period	Obligations	
06/01/85-05/31/86	FY85: \$18,000	TOTAL: \$18,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Wong, A. Y.	HQ-LE/Owens, F. C.	13-Physics

**NGT 05-006-801 University of California - Los Angeles 1866**  
NASA graduate student researchers program

Period	Obligations	
07/01/85-06/30/86	FY85: \$18,000	TOTAL: \$18,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Nicol, M. F.	HQ-EL/Owens, F. C.	12-Chemistry

**NSG 1490 University of California - Los Angeles 1867**  
Fundamental studies of methods for structural synthesis

Period	Obligations	
02/01/80-09/30/87	FY85: \$99,800	TOTAL: \$756,899
Prin. Invest.	NASA Tech. Officer	CASE Category
Schmit, L. A., Jr.	LARC/Sobieski, J.	49-Engr, NEC

**NSG 2290 University of California - Los Angeles 1868**  
Research program in jet/surface interactions

Period	Obligations	
11/01/77-10/31/86	FY85:	TOTAL: \$165,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Meecham, W. C.	ARC/Soderman, P.	41-Aero Engr

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NSG 4015 University of California - Los Angeles 1869**  
 Modeling, identification and control with applications to flight vehicles

Period	Obligations	
02/01/78-01/31/88	FY85: \$70,500	TOTAL: \$479,713
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Balakrishnan, A. V.	DFRF/Illiff, K. W.	41-Aero Engr

**NSG 4024 University of California - Los Angeles 1870**  
 Models for numerical simulation of gravity waves and clear air turbulence formation

Period	Obligations	
05/01/79-01/31/85	FY85:	TOTAL: \$246,757
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wurtele, M. G.	DFRF/Ehernberger, L. J.	31-Atmos Sci
Sharman, R. D.		

**NSG 4027 University of California - Los Angeles 1871**  
 System study for the application of microcomputers to research flight test techniques

Period	Obligations	
06/01/82-05/31/85	FY85:	TOTAL: \$137,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smyth, R. K.	DFRF/Abbott, L. W.	45-Elec Engr
	ARC/Phelps, J. R.	

**NSG 5263 University of California - Los Angeles 1872**  
 Earth dynamics analyses

Period	Obligations	
03/15/78-12/31/85	FY85:	TOTAL: \$364,897
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schubert, G.	GSFC/Welker, J.	32-Geological Sci
Ernst, W. G.		

**NSG 5272 University of California - Los Angeles 1873**  
 Problems of mass loss and mass transfer in close binary systems

Period	Obligations	
05/01/78-07/31/86	FY85: \$32,567	TOTAL: \$157,566
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Plavec, M. J.	GSFC/Kondo, Y.	11-Astronomy

**NSG 5351 University of California - Los Angeles 1874**  
 Investigation of the wayside boundary region plasma and magnetic field

Period	Obligations	
05/01/79-03/31/85	FY85: \$5,603	TOTAL: \$120,935
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Crooker, N.	GSFC/Wales, R. O.	32-Geological Sci
Siscoe, G. L.		

**NSG 5358 University of California - Los Angeles 1875**  
 Ultraviolet observations of high excitation planetary nebulae

Period	Obligations	
05/09/79-06/14/86	FY85: \$28,900	TOTAL: \$84,434
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Aller, L. H.	GSFC/Kondo, Y.	11-Astronomy
Feibelman, W. A.		
Maran, S. P.		

**NSG 7164 University of California - Los Angeles 1876**  
 Dynamical studies of the Venus atmosphere

Period	Obligations	
09/01/75-08/31/85	FY85:	TOTAL: \$302,372
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schubert, G.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NSG 7295 University of California - Los Angeles 1877**  
 Analysis of data from the helium vector magnetometers on the Pioneers 10 and 11 spacecraft

Period	Obligations	
10/01/76-09/30/85	FY85: \$72,000	TOTAL: \$826,542
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Coleman, P. J.	HQ-EL/Brinton, H. C.	31-Atmos Sci
Walker, R. J.	HQ-EL/Brunk, W. E.	

**NSG 7315 University of California - Los Angeles 1878**  
 Theoretical studies of Moon plasma interactions

Period	Obligations	
02/01/77-11/30/85	FY85: \$12,478	TOTAL: \$285,622
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schubert, G.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NSG 7341 University of California - Los Angeles 1879**  
 Physics of astrophysical plasmas

Period	Obligations	
04/01/77-11/30/85	FY85: \$45,000	TOTAL: \$332,703
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kennel, C. F.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Cline, T. L.	

**NSG 7484 University of California - Los Angeles 1880**  
 Planetary dynamos

Period	Obligations	
08/01/78-01/31/85	FY85:	TOTAL: \$76,320
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Busse, F. W.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	

**NAGW 309 University of California - Riverside 1881**  
 Thermoregulation in primates in hyper-acceleration fields

Period	Obligations	
03/15/82-03/14/85	FY85: \$64,965	TOTAL: \$154,972
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fuller, C. A.	HQ-EB/Halstead, T. W.	51-Biological Sci

**NAGW 709 University of California - Riverside 1882**  
 Solar wind plasma interaction with the Earth, Venus and comet Halley: A laboratory model

Period	Obligations	
02/01/85-01/31/86	FY85: \$49,902	TOTAL: \$49,902
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
White, R. S.	HQ-EL/Brinton, H. C.	11-Astronomy
	HQ-EL/Brunk, W. E.	

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NAS 2-10536 University of California - Riverside 1883**  
 Thermoregulation in primates in the space environment

Period	Obligations
01/17/80-03/31/87	FY85: \$276,000 TOTAL: \$1,129,381
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Fuller, C. A.	ARC/Leon, H. 51-Biological Sci
	ARC/Connolly, J.

**NAG 5-236 University of California - San Diego 1891**  
 Effects of global tropical weather satellite data on planetary waves

Period	Obligations
05/15/82-12/31/85	FY85: \$46,000 TOTAL: \$226,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Somerville, R. C.	GSFC/Baker, W. 31-Atmos Sci

**NGR 05-008-022 University of California - Riverside 1884**  
 Measurement of neutrons from Sun

Period	Obligations
05/16/69-11/30/85	FY85: \$210,161 TOTAL: \$1,566,285
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
White, R. S.	HQ-EZ/Ormes, J. F. 11-Astronomy
Zych, A. D.	HQ-EZ/Kaluzienski, L. J.

**NAG 5-320 University of California - San Diego 1892**  
 Development of a method for accurately tying sea surface positions to a deep sea floor reference point

Period	Obligations
05/15/83-05/14/86	FY85: \$25,000 TOTAL: \$89,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Spies, F. N.	GSFC/Welker, J. E. 32-Geological Sci

**NAG 2-153 University of California - San Diego 1885**  
 Pioneer 10 and 11 data analysis

Period	Obligations
01/01/82-02/28/86	FY85: \$120,000 TOTAL: \$409,961
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Fillius, W.	ARC/Fimmel, R. O. 19-Phys Sci, NEC
	ARC/Craig, R. A.

**NAG 5-364 University of California - San Diego 1893**  
 Hydrogen line ratios in the narrow line regions of active galaxies

Period	Obligations
09/01/83-02/28/86	FY85: \$6,000 TOTAL: \$18,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Coeheh, R. D.	GSFC/Kondo, Y. 11-Astronomy

**NAG 2-249 University of California - San Diego 1886**  
 High temperature absorption spectra

Period	Obligations
09/01/83-02/28/86	FY85: \$74,000 TOTAL: \$119,549
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Wilson, K. R.	ARC/Jaffe, R. L. 12-Chemistry
Reimers, J. R.	
Heller, E. J.	

**NAG 5-502 University of California - San Diego 1894**  
 Analysis of active region time scales in solar total irradiance variations

Period	Obligations
04/01/85-09/30/86	FY85: \$40,000 TOTAL: \$40,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Hudson, H. S.	GSFC/Bullock, G. D. 13-Physics

**NAG 3-473 University of California - San Diego 1887**  
 Combustion of particulate clouds at reduced gravitational conditions

Period	Obligations
01/02/84-08/31/85	FY85: \$100,000 TOTAL: \$258,584
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Berlad, A. L.	LERC/Sacksteder, K. 49-Engr, NEC

**NAG 5-523 University of California - San Diego 1895**  
 Relative to chromospheric evaporation

Period	Obligations
04/01/85-03/31/86	FY85: \$5,359 TOTAL: \$5,359
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Canfield, R. C.	GSFC/Bullock, G. D. 11-Astronomy

**NAG 3-542 University of California - San Diego 1888**  
 Study of spacecraft charging on ISEE

Period	Obligations
06/01/84-05/31/85	FY85: TOTAL: \$20,970
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Whipple, E. C.	LERC/Purvis, C. K. 13-Physics

**NAG 5-530 University of California - San Diego 1896**  
 Relative and gamma-ray spectrometer X-ray spectrometric development

Period	Obligations
04/01/85-03/31/86	FY85: \$24,698 TOTAL: \$24,698
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Arnold, J.	GSFC/Trombka, J. I. 11-Astronomy
	GSFC/Schmadebeck, R. L.

**NAG 3-654 University of California - San Diego 1889**  
 Effect of gravity on premixed turbulence flames

Period	Obligations
09/05/85-10/30/87	FY85: \$75,000 TOTAL: \$75,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Libby, P. A.	LERC/Sacksteder, K. R. 49-Engr, NEC

**NAG 5-562 University of California - San Diego 1897**  
 Absolute gravity measurements at satellite laser ranging stations

Period	Obligations
06/01/85-05/31/86	FY85: \$20,040 TOTAL: \$20,040
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Zumberge, M.	GSFC/Christodoulidis, D. C. 19-Phys Sci, NEC

**NAG 5-63 University of California - San Diego 1890**  
 A study of extragalactic sources

Period	Obligations
06/01/80-03/14/85	FY85: TOTAL: \$32,501
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Worrall, D. M.	GSFC/Kondo, Y. 11-Astronomy

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NAG 5-587 University of California - San Diego 1898**  
Investigation of the Northern adriatic sea

Period	Obligations
07/15/85-07/14/86	FY85: \$14,402 TOTAL: \$14,402
Prin. Invest.	NASA Tech. Officer CASE Category
Austin, R. W.	GSFC/McClain, C. R. 33-Oceanography
Barale, V.	

**NAG 9-83 University of California - San Diego 1906**  
Oxygen isotopic anomalies in meteorites: Supernovae and light

Period	Obligations
03/01/84-03/01/86	FY85: \$45,500 TOTAL: \$89,500
Prin. Invest.	NASA Tech. Officer CASE Category
Thiemens, M. H.	JSC/Browne, I. D. 32-Geological Sci

**NAG 5-610 University of California - San Diego 1899**  
USCD participation in active plasma release experiments

Period	Obligations
06/30/82-11/30/85	FY85: \$111,401 TOTAL: \$201,601
Prin. Invest.	NASA Tech. Officer CASE Category
Torbert, R. B.	GSFC/Early, L. J. 13-Physics
	GSFC/Pless, R. H.

**NAGW 20 University of California - San Diego 1907**  
Mechanism of synthesis of amino, hydroly and dicarboxlec acids in carbonaceous chondrites

Period	Obligations
12/01/79-11/30/85	FY85: \$54,476 TOTAL: \$304,578
Prin. Invest.	NASA Tech. Officer CASE Category
Miller, S. R.	HQ-EB/Devincenzi, D. L. 32-Geological Sci
	HQ-EB/Rambler, M.

**NAG 8-470 University of California - San Diego 1900**  
Investigation of roles for tethers on an evolving space station

Period	Obligations
05/01/84-04/30/85	FY85: TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer CASE Category
Arnold, J. R.	MSFC/Tiesenhausen, G. 42-Astro Engr

**NAGW 30 University of California - San Diego 1908**  
Radioactive transfer effects in quasi-stellar emission line clouds

Period	Obligations
02/01/80-01/31/86	FY85: \$32,287 TOTAL: \$197,733
Prin. Invest.	NASA Tech. Officer CASE Category
Townes, C. H.	HQ-EZ/Stencel, R. E. 11-Astronomy
Puetter, R. C.	HQ-EZ/Weiler, E. J.

**NAG 8-499 University of California - San Diego 1901**  
Hard X-ray and low energy gamma-ray experiment: HEAO-1 data reduction and analysis

Period	Obligations
10/01/84-09/30/85	FY85: \$85,000 TOTAL: \$85,000
Prin. Invest.	NASA Tech. Officer CASE Category
Peterson, L. E.	MSFC/Johnson, W. G. 11-Astronomy

**NAGW 103 University of California - San Diego 1909**  
The abundance of the elements

Period	Obligations
11/01/80-12/31/86	FY85: \$10,705 TOTAL: \$54,405
Prin. Invest.	NASA Tech. Officer CASE Category
Suess, H.	HQ-EL/French, B. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

**NAG 9-33 University of California - San Diego 1902**  
Historical studies on extraterrestrial materials

Period	Obligations
02/01/83-01/31/86	FY85: \$165,790 TOTAL: \$422,790
Prin. Invest.	NASA Tech. Officer CASE Category
Arnold, J. R.	JSC/Browne, I. D. 12-Chemistry

**NAGW 210 University of California - San Diego 1910**  
Condensation process in the early solar system

Period	Obligations
05/15/81-08/15/84	FY85: TOTAL: \$91,269
Prin. Invest.	NASA Tech. Officer CASE Category
Arnold, J. R.	HQ-EL/Williams, R. J. 32-Geological Sci
	HQ-EL/French, B. M.

**NAG 9-41 University of California - San Diego 1903**  
Fragmentary solar system history

Period	Obligations
02/01/83-02/01/86	FY85: \$129,000 TOTAL: \$364,000
Prin. Invest.	NASA Tech. Officer CASE Category
Marti, K.	JSC/Browne, I. D. 12-Chemistry
Lugmair, G. W.	

**NAGW 342 University of California - San Diego 1911**  
Thiol biochemistry of prokaryotes

Period	Obligations
06/08/82-09/30/85	FY85: \$23,000 TOTAL: \$253,000
Prin. Invest.	NASA Tech. Officer CASE Category
Fahey, R. C.	HQ-EB/Devincenzi, D. L. 51-Biological Sci
	HQ-EB/Rambler, M.

**NAG 9-49 University of California - San Diego 1904**  
Isotopic, chemical and mineralogical investigations of extraterrestrial materials

Period	Obligations
02/01/83-01/31/86	FY85: \$243,000 TOTAL: \$703,000
Prin. Invest.	NASA Tech. Officer CASE Category
Lugmair, G. W.	JSC/Browne, I. D. 32-Geological Sci

**NAGW 399 University of California - San Diego 1912**  
The physics and chemistry of dusty plasmas; A laboratory and theoretical investigation

Period	Obligations
01/01/83-12/31/85	FY85: \$200,000 TOTAL: \$600,000
Prin. Invest.	NASA Tech. Officer CASE Category
Whipple, E. C., Jr.	HQ-E/Rosendhal, J. D. 11-Astronomy
	HQ-E/Konkel, R. M.

**NAG 9-65 University of California - San Diego 1905**  
The Earth's early mantle and crust: Isotopic and chemical studies

Period	Obligations
02/01/84-02/01/86	FY85: \$22,000 TOTAL: \$44,000
Prin. Invest.	NASA Tech. Officer CASE Category
MacDougall, J. D.	JSC/Phinney, W. C. 39-Env Sci, NEC



**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAGW 449 University of California - San Diego 1913**  
High resolution gamma-ray spectroscopy of cosmic sources  
*Period* *Obligations*  
04/15/83-01/31/86 FY85: \$690,102 TOTAL: \$2,005,095  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Matteson, J. L. HQ-EZ/Cline, T. L. 11-Astronomy  
HQ-EZ/Kaluzienski, L. J.

**NAGW 458 University of California - San Diego 1914**  
Assessing ocean productivity from satellite measurements  
*Period* *Obligations*  
03/01/83-10/31/85 FY85: \$80,238 TOTAL: \$149,438  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Eppley, R. W. HQ-EE/Esaias, W. E. 33-Oceanography  
HQ-EE/Wilson, W. S.

**NAGW 584 University of California - San Diego 1915**  
Solar maximum study group  
*Period* *Obligations*  
04/01/84-03/31/85 FY85: TOTAL: \$23,404  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hudson, H. S. HQ-EZ/Thomas, R. J. 13-Physics

**NAGW 585 University of California - San Diego 1916**  
Analysis of solar variability  
*Period* *Obligations*  
04/01/84-03/31/86 FY85: \$42,000 TOTAL: \$122,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hudson, H. S. HQ-EZ/Spicer, D. S. 13-Physics

**NAGW 629 University of California - San Diego 1917**  
Research grant-program on space station automation  
*Period* *Obligations*  
05/19/84-10/31/85 FY85: \$10,000 TOTAL: \$393,970  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Arnold, J. R. HQ-S/Herman, D. H. 99-Multi-Discip

**NAGW 652 University of California - San Diego 1918**  
Trapped particle absorption by the ring of Jupiter  
*Period* *Obligations*  
09/01/84-08/31/85 FY85: TOTAL: \$39,204  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fillius, W. HQ-EE/Lynch, J. T. 13-Physics  
HQ-EE/Brinton, H. C.

**NAGW 663 University of California - San Diego 1919**  
Determination of ocean circulation and the geoid using satellite altimetry  
*Period* *Obligations*  
10/01/84-09/30/85 FY85: \$64,168 TOTAL: \$64,168  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tai, C. K. HQ-EE/Patzert, W. C. 33-Oceanography  
HQ-EE/Wilson, W. S.

**NAGW 664 University of California - San Diego 1920**  
Analysis of satellite tracked drifting buoys in the north Pacific  
*Period* *Obligations*  
10/01/84-09/30/85 FY85: \$137,888 TOTAL: \$137,888  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Luther, D. S. HQ-EE/Patzert, W. C. 33-Oceanography  
HQ-EE/Wilson, W. S.

**NAGW 683 University of California - San Diego 1921**  
Support of satellite oceanography experiments  
*Period* *Obligations*  
12/01/84-11/30/85 FY85: \$75,000 TOTAL: \$75,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Davis, R. E. HQ-EE/Esaias, W. E. 33-Oceanography  
HQ-EE/Wilson, W. S.

**NAGW 685 University of California - San Diego 1922**  
19th international cosmic ray conference  
*Period* *Obligations*  
09/01/84-09/30/85 FY85: \$49,952 TOTAL: \$49,952  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Peterson, L. E. HQ-EZ/Ormes, J. F. 11-Astronomy  
Lingenfelter, R. E. HQ-EZ/Kaluzienski, L. J.

**NAGW 697 University of California - San Diego 1923**  
International satellite cloud climatology project atology  
*Period* *Obligations*  
01/01/85-01/31/86 FY85: \$10,000 TOTAL: \$10,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gauntier, C. HQ-EE/Schiffer, R. A. 31-Atmos Sci

**NAS 3-24639 University of California - San Diego 1924**  
Scientific support for a Space Shuttle particle cloud combustion experiment  
*Period* *Obligations*  
09/01/85-12/15/88 FY85: \$61,000 TOTAL: \$61,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Berlad, A. L. LERC/Sacksteder, K. R. 49-Engr, NEC

**NAS 5-24463 University of California - San Diego 1925**  
Faint object spectrograph for space telescope  
*Period* *Obligations*  
09/15/78-06/30/86 FY85: \$3,517,000 TOTAL: \$38,502,583  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Harms, R. A. GSFC/White, R. A. 11-Astronomy  
GSFC/Sours, W. P.

**NAS 5-25054 University of California - San Diego 1926**  
Development of digital image tubes  
*Period* *Obligations*  
05/01/78-07/31/87 FY85: \$20,000 TOTAL: \$599,280  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Beaver, E. A. GSFC/Shannon, J. L. 11-Astronomy

**NAS 5-26854 University of California - San Diego 1927**  
Electric field investigation by electron drift studies (EFIELDS)  
*Period* *Obligations*  
06/15/82-09/30/85 FY85: TOTAL: \$236,069  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McIlwain, C. E. GSFC/O'Brien, J. J. 13-Physics

# **NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)**

**NAS 5-27228 University of California - San Diego 1928**  
A statistical understanding of tectonic motions analysis of crustal dynamics observations

Period	Obligations	
06/29/82-11/30/86	FY85: \$74,000	TOTAL: \$186,565
Prin. Invest.	NASA Tech. Officer	CASE Category
Agnew, D. C.	GSFC/Mead, G. D.	32-Geological Sci
Berger, J.		
Wyatt, F.		

**NAS 5-27234 University of California - San Diego 1929**  
Plate motion's and deformation from geologic and geodetic data

Period	Obligations	
05/27/82-11/27/84	FY85:	TOTAL: \$97,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Jordan, T. H.	GSFC/Mead, G. D.	32-Geological Sci

**NAS 5-27248 University of California - San Diego 1930**  
Gamma ray observatory instrument design review support

Period	Obligations	
06/16/82-09/30/84	FY85:	TOTAL: \$31,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Whipple, E. C.	GSFC/Davis, M. A.	49-Engr, NEC

**NAS 5-27315 University of California - San Diego 1931**  
Conduct and design a feasibility study for a microprocessor in the hydro-experiment

Period	Obligations	
07/06/82-04/30/84	FY85:	TOTAL: \$96,237
Prin. Invest.	NASA Tech. Officer	CASE Category
Fillins, R. W.	GSFC/Scudder, J. D.	19-Phys Sci, NEC
	GSFC/Ogilvie, K. W.	

**NAS 5-27602 University of California - San Diego 1932**  
X-ray timing Explorer experiment study experiment

Period	Obligations	
06/01/83-11/30/84	FY85: \$5,000	TOTAL: \$173,751
Prin. Invest.	NASA Tech. Officer	CASE Category
Rothschild, R. E.	GSFC/Hibbard, W. B.	42-Astro Engr
Pelling, R. M.		

**NAS 5-28021 University of California - San Diego 1933**  
Coastal zone color scanner/net support and studies

Period	Obligations	
01/10/84-04/14/85	FY85: \$25,000	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Austin, R. W.	GSFC/Szajna, E. F.	31-Atmos Sci

**NAS 5-28164 University of California - San Diego 1934**  
Design a fast, steppable bipolar high voltage power supply suitable for the open program

Period	Obligations	
05/22/84-06/30/85	FY85: \$40,000	TOTAL: \$102,141
Prin. Invest.	NASA Tech. Officer	CASE Category
Torbert, R. B.	GSFC/Scudder, J. D.	45-Elec Engr

**NAS 5-29117 University of California - San Diego 1935**  
High energy X-ray timing experiment energy X-ray timing experiment (HEXTE)

Period	Obligations	
03/19/85-11/30/85	FY85: \$300,000	TOTAL: \$300,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Rothschild, R.	GSFC/Hibbard, W.	42-Astro Engr

**NAS 8-27974 University of California - San Diego 1936**  
Design and development of AGR-4 MeV range gamma ray telescope experiment under the HEAO program

Period	Obligations	
06/22/72-12/31/84	FY85:	TOTAL: \$8,910,438
Prin. Invest.	NASA Tech. Officer	CASE Category
Peterson, L. E.	MSFC/Stone, J. F.	11-Astronomy
	MSFC/Lusk, J. L.	

**NAS 8-36081 University of California - San Diego 1937**  
Burst and transient source experiment (BATSE) spectroscopy detector (SD)

Period	Obligations	
06/01/84-05/31/92	FY85: \$650,000	TOTAL: \$650,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Matteson, J. L.	MSFC/Schrick, B. J.	11-Astronomy

**NAS 9-16037 University of California - San Diego 1938**  
Pulmonary functions during weightlessness

Period	Obligations	
01/17/80-10/31/86	FY85: \$623,000	TOTAL: \$2,796,931
Prin. Invest.	NASA Tech. Officer	CASE Category
Young, W.	JSC/West, J. B.	59-Life Sci, NEC

**NASW 3643 University of California - San Diego 1939**  
Research into selected key factors of space industrialization and lunar utilization

Period	Obligations	
09/27/82-09/30/84	FY85: \$42,079	TOTAL: \$221,219
Prin. Invest.	NASA Tech. Officer	CASE Category
Arnold, J. R.	HQ-EN/Gordon, P. G.	49-Engr, NEC
	HQ-EN/Testardi, L. R.	

**NASW 3667 University of California - San Diego 1940**  
Development of a charged-coupled-device digicon for space astronomy

Period	Obligations	
10/01/82-09/30/85	FY85: \$164,015	TOTAL: \$458,983
Prin. Invest.	NASA Tech. Officer	CASE Category
Hier, R. G.	HQ-EZ/Weiler, E. J.	11-Astronomy
	HQ-EZ/Stencel, R. E.	

**NASW 3669 University of California - San Diego 1941**  
Development of a self contained acoustic Doppler velocity profiler

Period	Obligations	
02/01/83-01/31/86	FY85: \$340,090	TOTAL: \$590,320
Prin. Invest.	NASA Tech. Officer	CASE Category
Davis, R. E.	HQ-EE/Patzert, W. C.	33-Oceanography
	HQ/Wilson, W. S.	

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NASW 3702 University of California - San Diego 1942**  
Development of optimized detector/ spectrophotometer technology for low background space astronomy missions

Period	Obligations	
12/01/82-04/30/85	FY85: TOTAL: \$254,671	
Prin. Invest.	NASA Tech. Officer	CASE Category
Jones, B.	HQ-EZ/Boggess, N. W.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

**NCA 2-68 University of California - San Diego 1943**  
An investigation into the capital funding mechanisms for commercial space ventures (joint research interchange)

Period	Obligations	
09/01/85-12/31/85	FY85: \$2,708 TOTAL: \$2,708	
Prin. Invest.	NASA Tech. Officer	CASE Category
Zocco, D. P.	ARC/Milov, L. A.	72-Economics

**NCC 2-335 University of California - San Diego 1944**  
Cardiac reserve during weightlessness simulation and shuttle flight

Period	Obligations	
10/15/84-10/14/85	FY85: \$15,000 TOTAL: \$15,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Goldberger, A. L.	ARC/Goldwater, D. J.	51-Biological Sci

**NGL 05-005-004 University of California - San Diego 1945**  
Theoretical studies in astrophysics

Period	Obligations	
02/04/63-06/30/86	FY85: \$49,476 TOTAL: \$1,052,956	
Prin. Invest.	NASA Tech. Officer	CASE Category
Gould, R. J.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Cline, T. L.	

**NGL 05-005-007 University of California - San Diego 1946**  
Study of geomagnetically trapped particles by Explorer and Injun satellite data, refining particle detectors, detector systems and telemetered data processing equipment

Period	Obligations	
02/20/64-09/30/85	FY85: \$215,000 TOTAL: \$3,661,364	
Prin. Invest.	NASA Tech. Officer	CASE Category
McIlwain, C. E.	HQ-EE/Lynch, J. T.	13-Physics
	HQ-EE/Shawhan, S. D.	

**NGR 05-005-005 University of California - San Diego 1947**  
Study of lunar gamma ray emission

Period	Obligations	
09/10/63-01/31/86	FY85: \$62,000 TOTAL: \$1,242,803	
Prin. Invest.	NASA Tech. Officer	CASE Category
Pettengill, G. H.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NGR 05-005-055 University of California - San Diego 1948**  
Infrared astronomic observation from high altitude airplane/ telescope program

Period	Obligations	
06/05/73-08/31/85	FY85: TOTAL: \$574,603	
Prin. Invest.	NASA Tech. Officer	CASE Category
Jones, B.	ARC/Haughney, L. C.	11-Astronomy

**NGR 05-009-110 University of California - San Diego 1949**  
The structure and evolution of the asteroid belt

Period	Obligations	
01/23/70-11/30/85	FY85: TOTAL: \$841,690	
Prin. Invest.	NASA Tech. Officer	CASE Category
Mendis, D. A.	HQ-EL/Brinton, H. C.	11-Astronomy
Alfven, H.	HQ-EL/Brunk, W. E.	

**NGR 05-009-188 University of California - San Diego 1950**  
Construction of a 200 channel photometer for use in low light level astronomy

Period	Obligations	
05/17/72-12/31/83	FY85: TOTAL: \$618,743	
Prin. Invest.	NASA Tech. Officer	CASE Category
McIlwain, C. E.	HQ-EZ/Weiler, E. J.	11-Astronomy

**NGT 05-005-800 University of California - San Diego 1951**  
Summer faculty fellowship program 1984

Period	Obligations	
04/01/84-03/31/85	FY85: TOTAL: \$260,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Arnold, J. R.	HQ-LB/Owens, F. C.	49-Engr, NEC
Nozette, S.		

**NSG 7027 University of California - San Diego 1952**  
Orbital geochemical data analysis and synthesis

Period	Obligations	
03/01/74-02/28/85	FY85: TOTAL: \$511,653	
Prin. Invest.	NASA Tech. Officer	CASE Category
Arnold, J. R.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NSG 7102 University of California - San Diego 1953**  
Research on processes controlling the formation and evolution of the small bodies in the solar

Period	Obligations	
09/01/74-10/31/85	FY85: \$54,776 TOTAL: \$567,990	
Prin. Invest.	NASA Tech. Officer	CASE Category
Alfven, H.	HQ-EL/Boyce, J. M.	32-Geological Sci
Mendis, D.	HQ-EL/Holt, H. E.	

**NSG 7121 University of California - San Diego 1954**  
Carbonaceous chondrites early irradiation and 244/Pu fission records

Period	Obligations	
02/27/75-01/31/84	FY85: TOTAL: \$398,421	
Prin. Invest.	NASA Tech. Officer	CASE Category
MacDougall, J. D.	HQ-EL/Taylor, L. A.	32-Geological Sci
	HQ-EL/Quaide, W. L.	

**NSG 7161 University of California - San Diego 1955**  
Analysis and interpretation of solar X-ray data from OSO-7

Period	Obligations	
07/01/75-10/31/85	FY85: \$85,000 TOTAL: \$684,453	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hudson, H. S.	HQ-EZ/Spicer, D. S.	13-Physics

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

## **NSG 7377 University of California - San Diego 1956** Ultraviolet spectra of quasars related extra galactic sources, and X-ray sources

Period	Obligations
09/15/77-09/14/86	FY85: \$30,499 TOTAL: \$275,755
Prin. Invest.	NASA Tech. Officer CASE Category
Burbidge, E. M.	HQ-EZ/Stencel, R. E. 11-Astronomy
	HQ-EZ/Weiler, E. J.

## **NSG 7406 University of California - San Diego 1957** Hydrodynamic models of flares

Period	Obligations
03/01/78-01/31/86	FY85: \$147,300 TOTAL: \$756,765
Prin. Invest.	NASA Tech. Officer CASE Category
Canfield, R. C.	HQ-EZ/Spicer, D. S. 13-Physics

## **NSG 7541 University of California - San Diego 1958** Theoretical studies in gamma ray line astronomy

Period	Obligations
02/01/80-03/31/86	FY85: \$65,303 TOTAL: \$349,953
Prin. Invest.	NASA Tech. Officer CASE Category
Lingenfelter, R. E.	HQ-EZ/Kaluzienski, L. J. 11-Astronomy
	HQ-EZ/Cline, T. L.

## **NSG 7623 University of California - San Diego 1959** The new plasmas and its applications to planetary magnetospheres and the heliosphere

Period	Obligations
07/01/79-06/30/85	FY85: TOTAL: \$387,958
Prin. Invest.	NASA Tech. Officer CASE Category
Alfven, H.	HQ-EE/Lynch, J. T. 19-Phys Sci, NEC
	HQ-EE/Shawhan, S. D.

## **NAGW 236 University of California - San Francisco 1960** Alterations in gut transport of minerals and in binding protein during simulated weightlessness

Period	Obligations
08/01/81-11/30/84	FY85: TOTAL: \$177,997
Prin. Invest.	NASA Tech. Officer CASE Category
Bikle, D. D.	HQ-EB/Halstead, T. W. 51-Biological Sci

## **NAGW 307 University of California - San Francisco 1961** Exobiology: Extension of work on organic geochemistry chemical evolution and evolution of living systems

Period	Obligations
01/01/82-10/31/85	FY85: \$65,000 TOTAL: \$440,000
Prin. Invest.	NASA Tech. Officer CASE Category
Calvin, M.	HQ-EB/Devincenzi, D. L.
	32-Geological Sci
Burlingame, A. L.	HQ-EB/Rambler, M. B.

## **NAGW 349 University of California - San Francisco 1962** Changes in bone structure and metabolism during simulated weightlessness endocrine and dietary factors

Period	Obligations
07/01/82-10/31/84	FY85: TOTAL: \$92,250
Prin. Invest.	NASA Tech. Officer CASE Category
Halloran, B.	HQ-EB/Halstead, T. W. 51-Biological Sci

## **NAGW 490 University of California - San Francisco 1963** Neural mechanisms by which gravitational stimuli and stress effect the secretion of revise and other hormous

Period	Obligations
08/01/83-01/31/86	FY85: \$60,000 TOTAL: \$199,519
Prin. Invest.	NASA Tech. Officer CASE Category
Ganong, W. F.	HQ-EB/Halstead, T. W. 51-Biological Sci

## **NAS 9-16227 University of California - San Francisco 1964** Pathophysiology of mineral loss during increased urinary and fecal calcium excretion

Period	Obligations
03/01/80-10/31/86	FY85: \$162,000 TOTAL: \$422,697
Prin. Invest.	NASA Tech. Officer CASE Category
Arnaud, C. D.	JSC/Newkirk, K. E. 59-Life Sci, NEC

## **NCA 2-13 University of California - San Francisco 1965** Vestibular nuclei projections to primate thalamus

Period	Obligations
03/01/85-08/31/85	FY85: \$12,000 TOTAL: \$12,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ralston, H. J.	ARC/Mehler, W. R. 51-Biological Sci

## **NCA 2-32 University of California - San Francisco 1966** Development and verification of a radioimmunoassay for atriopeptin (atrial natriuretic factor)

Period	Obligations
04/01/85-03/31/86	FY85: \$10,000 TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer CASE Category
Thrasher, T. N.	ARC/Keil, L. C. 56-Medical Sciences

## **NCA 2-665203 University of California - San Francisco 1967** Hormonal responses to headdown bedrest

Period	Obligations
07/01/82-06/30/84	FY85: TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer CASE Category
Reid, I. A.	ARC/Keil, L. C. 51-Biological Sci

## **NCA 2-665301 University of California - San Francisco 1968** Immunocytochemical localization of neuropeptides in the chemoreceptive vomiting trigger zone

Period	Obligations
01/01/83-06/30/84	FY85: TOTAL: \$22,200
Prin. Invest.	NASA Tech. Officer CASE Category
Basbaum, A. I.	ARC/Mehler, W. R. 56-Medical Sciences

## **NCA 2-665401 University of California - San Francisco 1969** Effect of corticosteroids on sympathetic nervous system function in rats

Period	Obligations
05/01/84-09/30/85	FY85: TOTAL: \$39,984
Prin. Invest.	NASA Tech. Officer CASE Category
Dallman, M. F.	ARC/Keil, L. C. 51-Biological Sci
	ARC/Danellis, J. V.

## **NCA 2-665402 University of California - San Francisco 1970** Mechanisms of suppression of renin secretion by vasopressin

Period	Obligations
07/01/84-06/30/86	FY85: \$12,870 TOTAL: \$22,870
Prin. Invest.	NASA Tech. Officer CASE Category
Reid, I. A.	ARC/Keil, L. C. 51-Biological Sci

## NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

**NCA 2-665905 University of California - San Francisco 1971**  
Quantitative determination of diastolic left ventricular properties and dynamic geometry in the dog

Period	Obligations	
07/01/79-06/30/85	FY85:	TOTAL: \$20,968
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Glantz, S. A.	ARC/Sandler, H.	56-Medical Sciences

**NCC 2-115 University of California - San Francisco 1972**  
A preventive method for the zero-gravity sickness syndrome

Period	Obligations	
01/01/81-10/31/85	FY85: \$226,739	TOTAL: \$849,468
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kamiya, J.	ARC/Cowings, P. S.	61-Biol Aspects

**NCC 2-162 University of California - San Francisco 1973**  
Ultrastructural and biochemical studies of transport by cultured osteosarcoma cells in vitro

Period	Obligations	
10/01/81-10/31/85	FY85: \$30,804	TOTAL: \$109,456
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Arnaud, C. D.	ARC/Philpott, D. E.	56-Medical Sciences

**NCC 2-178 University of California - San Francisco 1974**  
Bone, calcium, and space flight

Period	Obligations	
03/01/82-10/31/85	FY85:	TOTAL: \$25,987
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cann, C. E.	ARC/Holton, E. M.	56-Medical Sciences

**NCC 2-194 University of California - San Francisco 1975**  
The role of low and high pressure baroreceptors in the control of fluid balance

Period	Obligations	
06/01/82-05/31/86	FY85: \$24,000	TOTAL: \$81,976
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ramsay, D. J.	ARC/Keil, L. C.	59-Life Sci, NEC

**NCC 2-328 University of California - San Francisco 1976**  
The effect of skeletal unloading on bone formation

Period	Obligations	
11/01/84-10/31/85	FY85: \$100,999	TOTAL: \$100,999
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bikle, D. D.	ARC/Holton, E. M.	51-Biological Sci

**NCC 2-363 University of California - San Francisco 1977**  
Parathyroid and vitamin D function in disuse osteoporosis: Effect of dietary calcium

Period	Obligations	
06/01/85-10/31/85	FY85: \$40,400	TOTAL: \$40,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cann, C. E.	ARC/Arnaud, S. B.	59-Life Sci, NEC

**NCC 2-365 University of California - San Francisco 1978**  
Histological and compositional responses of bone to immobilization and other experimental conditions

Period	Obligations	
09/01/85-10/31/85	FY85: \$7,394	TOTAL: \$7,394
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brown, R. J.	ARC/Young, D. R.	56-Medical Sciences
Niklowitz, W. J.		

**NGT 05-029-801 University of California - San Francisco 1979**  
NASA graduate student researchers program

Period	Obligations	
09/15/85-09/14/86	FY85: \$18,000	TOTAL: \$18,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bikle, D.	HQ-LE/Owens, F. C.	51-Biological Sci

**NSG 7151 University of California - San Francisco 1980**  
Light energy conversion in halobacterium

Period	Obligations	
07/01/75-10/31/85	FY85: \$30,076	TOTAL: \$519,381
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stoeckenius, W.	HQ-EB/Devincenzi, D. L.	
Bogomolni, R. A.	HQ-EB/Rambler, M. B.	51-Biological Sci

**NAG 1-563 University of California - Santa Barbara 1981**  
Methane fluxes in the amazon basin

Period	Obligations	
05/01/85-04/30/86	FY85: \$33,560	TOTAL: \$33,560
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Melack, J. M.	LARC/Sebacher, D. I.	31-Atmos Sci
	LARC/Harriss, R. C.	

**NAG 1-567 University of California - Santa Barbara 1982**  
Sensitivity of optimized designs to problem parameters

Period	Obligations	
02/01/85-01/31/86	FY85: \$34,990	TOTAL: \$34,990
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Vanderplaats, G. N.	LARC/Sobieski, J.	41-Aero Engr

**NAG 2-352 University of California - Santa Barbara 1983**  
Workstations and the NASA pilot land data system

Period	Obligations	
04/01/85-12/30/85	FY85: \$7,980	TOTAL: \$7,980
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Estes, J. E.	ARC/Likens, W. C.	59-Life Sci, NEC
Star, J. L.		

**NAG 5-177 University of California - Santa Barbara 1984**  
Neotectonics of the San Andres Fault system-basin and range province juncture

Period	Obligations	
05/01/81-05/31/85	FY85:	TOTAL: \$86,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Estes, J. E.	GSFC/Lowman, P. D., Jr.	
Crowell, J. C.		32-Geological Sci

**NAG 5-328 University of California - Santa Barbara 1985**  
Research relative to angular distribution of snow reflectance

Period	Obligations	
07/01/83-09/30/86	FY85: \$9,838	TOTAL: \$29,838
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dozier, J.	GSFC/Chang, A. T.	32-Geological Sci

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

## **NAG 5-369 University of California - Santa Barbara 1986** Advanced data structures for integration of image and cartographic data

Period	Obligations
09/01/83-02/28/86	FY85: \$49,943 TOTAL: \$103,524
Prin. Invest.	NASA Tech. Officer CASE Category
Peuquet, D. J.	GSFC/Campbell, W. J.
	22-Computer Science
	GSFC/Berbert, J. H.

## **NAGW 391 University of California - Santa Barbara 1993** Improved materials preparation and the role of convection on crystal growth and polymerization in the area of one-dimensional conductors and conducting polymers

Period	Obligations
12/01/82-11/30/84	FY85: TOTAL: \$113,076
Prin. Invest.	NASA Tech. Officer CASE Category
Heeger, A. J.	HQ-EN/Oran, W. A.
	13-Physics
	HQ-EN/Spears, D. R.

## **NAG 5-548 University of California - Santa Barbara 1987** Ecological properties of the biosphere assessing key vegetation characteristics

Period	Obligations
05/06/85-05/05/86	FY85: \$110,000 TOTAL: \$110,000
Prin. Invest.	NASA Tech. Officer CASE Category
Botkin, D. B.	GSFC/Hall, F. G.
Estes, J. E.	39-Env Sci, NEC
Woods, K. D.	

## **NAGW 455 University of California - Santa Barbara 1994** NASA remote sensing information sciences research group

Period	Obligations
05/01/83-04/30/86	FY85: \$150,000 TOTAL: \$532,000
Prin. Invest.	NASA Tech. Officer CASE Category
Estes, J. E.	HQ-EL/Tuyahov, A. J.
Botkin, D.	39-Env Sci, NEC
Peuquet, D.	

## **NAG 9-64 University of California - Santa Barbara 1988** Habitation of the earth: Assessing key vegetation

Period	Obligations
02/01/83-12/01/84	FY85: TOTAL: \$102,985
Prin. Invest.	NASA Tech. Officer CASE Category
Botkin, D. B.	JSC/Browne, I. D.
	39-Env Sci, NEC

## **NAGW 788 University of California - Santa Barbara 1995** Canopy reflectance in a tropical wooded grassland

Period	Obligations
07/01/85-06/30/86	FY85: \$25,000 TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer CASE Category
Simonett, D. S.	HQ-EE/Murphy, R. E.
	39-Env Sci, NEC
	HQ-EE/Wickland, D. E.

## **NAG 9-71 University of California - Santa Barbara 1989** Lunar paleointensity determinations

Period	Obligations
03/01/84-02/28/86	FY85: \$3,000 TOTAL: \$38,000
Prin. Invest.	NASA Tech. Officer CASE Category
Fuller, M. D.	JSC/Browne, I. D.
Cisowski, S. M.	32-Geological Sci

## **NAS 5-27463 University of California - Santa Barbara 1996** LANDSAT-D investigations in snow hydrology

Period	Obligations
11/17/82-03/16/85	FY85: TOTAL: \$194,553
Prin. Invest.	NASA Tech. Officer CASE Category
Dozier, J.	GSFC/Oseroff, H.
	39-Env Sci, NEC
	GSFC/Stuart, L. M.

## **NAG 9-72 University of California - Santa Barbara 1990** Magnetism of nakhlites and chassignites

Period	Obligations
03/01/84-02/28/85	FY85: TOTAL: \$15,212
Prin. Invest.	NASA Tech. Officer CASE Category
Cisowski, S. M.	JSC/Dietrich, J. W.
	32-Geological Sci

## **NAS 5-28697 University of California - Santa Barbara 1997** Sensor evaluation for vegetation analysis

Period	Obligations
04/09/85-08/08/87	FY85: \$60,000 TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer CASE Category
Estes, J. E.	GSFC/Oseroff, H.
	39-Env Sci, NEC

## **NAGW 290 University of California - Santa Barbara 1991** Ship and satellite bio-optical research in the California blight

Period	Obligations
02/01/82-09/30/85	FY85: \$241,159 TOTAL: \$768,994
Prin. Invest.	NASA Tech. Officer CASE Category
Smith, R. C.	HQ-EE/Esaias, W. E.
Baker, K. S.	33-Oceanography
	HQ-EE/Wilson, W. S.

## **NAS 5-28770 University of California - Santa Barbara 1998** Thematic mapper investigations in atmospheric correction and measurement of snow radiation

Period	Obligations
08/01/85-11/30/88	FY85: \$231,214 TOTAL: \$231,214
Prin. Invest.	NASA Tech. Officer CASE Category
Dozier, J.	GSFC/Oseroff, H.
	39-Env Sci, NEC

## **NAGW 323 University of California - Santa Barbara 1992** Global vegetation inventory and monitoring using remote sensing technology

Period	Obligations
05/01/82-03/31/85	FY85: TOTAL: \$343,937
Prin. Invest.	NASA Tech. Officer CASE Category
Kim, B.	HQ-EB/Rambler, M. B.
Bodkin, D. B.	39-Env Sci, NEC
Estes, J. E.	HQ-EB/Devincenzi, D. L.

## **NCA 2-3 University of California - Santa Barbara 1999** Land use in the vicinity of ICBM missile sites

Period	Obligations
12/03/84-07/31/85	FY85: \$12,139 TOTAL: \$12,139
Prin. Invest.	NASA Tech. Officer CASE Category
Estes, J. E.	ARC/Ackerman, T.
Haiic, E.	39-Env Sci, NEC

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NCA 2-680401 University of California - Santa Barbara 2000**  
Applying artificial intelligence to large networks

Period	Obligations
10/01/83-05/31/84	FY85: TOTAL: \$14,315
Prin. Invest.	NASA Tech. Officer CASE Category
Estes, J. E.	ARC/Likens, W. C. 22-Computer Science
Smith, T. R.	

**NCC 2-63 University of California - Santa Barbara 2001**  
An investigation of the effect of surface impurities on the absorption kinetics of hydrogen chemisorbed iron

Period	Obligations
04/01/80-03/31/86	FY85: \$94,070 TOTAL: \$448,797
Prin. Invest.	NASA Tech. Officer CASE Category
Shanabarger, M. R.	ARC/Nelson, H. G. 47-Materials Engr

**NCC 2-359 University of California - Santa Barbara 2002**  
Knowledge-based engineering for data base management and use

Period	Obligations
05/01/85-10/31/86	FY85: \$100,394 TOTAL: \$100,394
Prin. Invest.	NASA Tech. Officer CASE Category
Smith, T. R.	ARC/Lawless, J. G. 29-Math/Computer, NEC
Peuquet, D. J.	

**NCC 9-11 University of California - Santa Barbara 2003**  
Continental scale ecosystem mapping: North American boreal forests

Period	Obligations
01/01/84-07/01/85	FY85: TOTAL: \$150,800
Prin. Invest.	NASA Tech. Officer CASE Category
Estes, J. E.	JSC/Browne, I. D. 39-Env Sci, NEC
Botkin, D. B.	

**NCC 9-13 University of California - Santa Barbara 2004**  
Remote sensing of boreal forest biomass and biological production: Long-term planning for the use of computer models and selection of field sites

Period	Obligations
04/01/84-10/01/85	FY85: \$48,000 TOTAL: \$98,000
Prin. Invest.	NASA Tech. Officer CASE Category
Botkin, D. B.	JSC/Browne, I. D. 39-Env Sci, NEC
Estes, J. E.	

**NGR 05-010-062 University of California - Santa Barbara 2005**  
Planetary geophysics

Period	Obligations
03/01/73-01/31/86	FY85: \$75,000 TOTAL: \$451,907
Prin. Invest.	NASA Tech. Officer CASE Category
Peale, S. J.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

**NGT 05-010-801 University of California - Santa Barbara 2006**  
NASA graduate student researchers program

Period	Obligations
09/15/81-09/14/84	FY85: TOTAL: \$37,500
Prin. Invest.	NASA Tech. Officer CASE Category
Dozier, J.	HQ-LB/Owens, F. C. 39-Env Sci, NEC

**NGT 05-010-802 University of California - Santa Barbara 2007**  
NASA graduate student researchers program

Period	Obligations
09/01/82-08/31/85	FY85: TOTAL: \$40,150
Prin. Invest.	NASA Tech. Officer CASE Category
Estes, J. E.	HQ-LB/Owens, F. C. 59-Life Sci, NEC

**NGT 05-010-803 University of California - Santa Barbara 2008**  
NASA graduate student researchers program

Period	Obligations
09/01/82-09/30/85	FY85: TOTAL: \$39,750
Prin. Invest.	NASA Tech. Officer CASE Category
Dozier, J.	HQ-LB/Owens, F. C. 99-Multi-Discip

**NGT 05-010-804 University of California - Santa Barbara 2009**  
NASA graduate student researchers program

Period	Obligations
07/01/84-06/30/86	FY85: \$16,500 TOTAL: \$30,150
Prin. Invest.	NASA Tech. Officer CASE Category
Simonett, D. S.	HQ-LB/Owens, F. C. 32-Geological Sci

**NGT 05-010-805 University of California - Santa Barbara 2010**  
NASA graduate student researchers program

Period	Obligations
07/01/84-06/30/86	FY85: \$18,000 TOTAL: \$31,500
Prin. Invest.	NASA Tech. Officer CASE Category
Smith, T.	HQ-LB/Owens, F. C. 32-Geological Sci

**NAG 2-368 University of California - Santa Cruz 2011**  
Numerical studies of collapsing interstellar clouds

Period	Obligations
10/01/85-01/31/86	FY85: \$11,100 TOTAL: \$11,100
Prin. Invest.	NASA Tech. Officer CASE Category
Bodenheimer, P.	ARC/Cassen, P. M. 11-Astronomy
Villere, K. R.	

**NAG 5-352 University of California - Santa Cruz 2012**  
Research relative to ultraviolet spectrophotometry of normal spiral galaxies

Period	Obligations
08/01/83-07/31/84	FY85: TOTAL: \$7,039
Prin. Invest.	NASA Tech. Officer CASE Category
Miller, J. S.	GSFC/Kondo, Y. 11-Astronomy
Goodrich, R. W.	

**NAG 5-436 University of California - Santa Cruz 2013**  
Metallicity and the level of the ultraviolet rising branch in elliptical galaxies

Period	Obligations
07/01/84-03/31/86	FY85: \$7,000 TOTAL: \$19,130
Prin. Invest.	NASA Tech. Officer CASE Category
Faber, S. M.	GSFC/Kondo, Y. 11-Astronomy
Burstein, D.	

**NAGW 508 University of California - Santa Cruz 2014**  
Global accretion disk instabilities in cataclysmic variables

Period	Obligations
08/01/83-09/30/84	FY85: TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer CASE Category
Faulkner, J.	HQ-EZ/Stencel, R. E. 11-Astronomy
	HQ-EZ/Weiler, E. J.

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAGW 590 University of California - Santa Cruz 2015**  
Structure of Saturn's ring; Collision properties of water/ice particles

<i>Period</i>	<i>Obligations</i>	
02/01/84-03/31/86	FY85: \$42,000	TOTAL: \$82,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lin, D. N.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NCA 2-62 University of California - Santa Cruz 2016**  
Optimization of infrared detector systems requiring different cryogenic temperatures (joint research interchange)

<i>Period</i>	<i>Obligations</i>	
09/01/85-08/31/87	FY85: \$40,000	TOTAL: \$40,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rank, D.	ARC/Erickson, E. F.	11-Astronomy

**NCA 2-65 University of California - Santa Cruz 2017**  
Angular momentum transport in protoplanetary disks

<i>Period</i>	<i>Obligations</i>	
07/01/85-06/30/87	FY85: \$12,000	TOTAL: \$12,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lin, D. N.	ARC/Cassen, P. M.	11-Astronomy

**NCA 2-66 University of California - Santa Cruz 2018**  
Rotation in early stages of stellar evolution

<i>Period</i>	<i>Obligations</i>	
07/01/85-06/30/87	FY85: \$12,000	TOTAL: \$12,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bodenheimer, P.	ARC/Cassen, P. M.	11-Astronomy
	ARC/Black, D. C.	

**NCA 2-690401 University of California - Santa Cruz 2019**  
The composition and ages of elliptical galaxies

<i>Period</i>	<i>Obligations</i>	
11/01/83-10/31/85	FY85: \$39,978	TOTAL: \$77,750
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Faber, S. M.	ARC/Augason, G. C.	11-Astronomy
Carbon, D. F.		

**NCA 2-690403 University of California - Santa Cruz 2020**  
Kinetic theory of gravitational torques in particle disks

<i>Period</i>	<i>Obligations</i>	
03/01/84-08/31/84	FY85:	TOTAL: \$15,938
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lin, D. N.	ARC/Cuzzi, J. N.	11-Astronomy
Stewart, G. L.		

**NCA 2-690404 University of California - Santa Cruz 2021**  
Infrared emission from gases and dust: Spacelab 2 sky map analysis and Kuiper Airborne Observatory KAO spectroscopy

<i>Period</i>	<i>Obligations</i>	
08/12/84-08/11/86	FY85: \$37,099	TOTAL: \$66,099
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rank, D. M.	ARC/Witteborn, F. C.	11-Astronomy
Simpson, J. P.	ARC/Erickson, E. F.	

**NCA 2-690501 University of California - Santa Cruz 2022**  
Image processing of Saturn's ring features

<i>Period</i>	<i>Obligations</i>	
01/01/85-09/15/85	FY85: \$19,099	TOTAL: \$19,099
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lin, N. C.	ARC/Cuzzi, J. N.	11-Astronomy
	ARC/Pollack, J. B.	

**NCC 2-269 University of California - Santa Cruz 2023**  
Numerical studies of collapsing interstellar clouds

<i>Period</i>	<i>Obligations</i>	
09/01/83-08/31/85	FY85: \$12,249	TOTAL: \$49,499
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bodenheimer, P. H.	ARC/Black, D.	11-Astronomy

**NCC 2-281 University of California - Santa Cruz 2024**  
Evolution of primordial gas clouds

<i>Period</i>	<i>Obligations</i>	
02/15/84-02/28/86	FY85: \$32,497	TOTAL: \$58,091
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bodenheimer, P.	ARC/Black, D.	11-Astronomy

**NGT 05-061-800 University of California - Santa Cruz 2025**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
07/01/82-06/30/85	FY85:	TOTAL: \$36,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bodenheimer, P.	HQ-LB/Owens, F. C.	13-Physics

**NGT 05-061-801 University of California - Santa Cruz 2026**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
09/15/84-09/14/86	FY85: \$12,500	TOTAL: \$24,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lin, D.	HQ-LB/Owens, F. C.	41-Aero Engr

**NSG 7503 University of California - Santa Cruz 2027**  
Astronomical applications of charged coupled device technology

<i>Period</i>	<i>Obligations</i>	
11/01/78-04/30/85	FY85:	TOTAL: \$125,127
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Miller, J. S.	HQ-EZ/Weiler, E. J.	11-Astronomy
	HQ-EZ/Boggess, N. W.	

**NAG 2-192 University of The Pacific 2028**  
Slotted wall interference in subsonic wind tunnels of arbitrary cross section and using boundary conditions accounting for wall boundary layers

<i>Period</i>	<i>Obligations</i>	
08/15/82-08/31/84	FY85:	TOTAL: \$23,868
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pejack, E. R.	ARC/Steinle, F. W., Jr.	41-Aero Engr

**NAG 2-322 University of The Pacific 2029**  
Bone cell kinetics of simulated weightlessness

<i>Period</i>	<i>Obligations</i>	
11/01/84-10/31/85	FY85: \$52,494	TOTAL: \$52,494
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roberts, W. E.	ARC/Holton, E. M.	51-Biological Sci



# **NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)**

**NAGW 356 University of The Pacific 2030**  
Bone cell kinetics of simulated weightlessness  
*Period Obligations*  
07/01/82-11/30/84 FY85: TOTAL: \$124,390  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Roberts, W. E. HQ-EB/Halstead, T. W. 51-Biological Sci

**NCA 2-588401 University of The Pacific 2031**  
Far infrared lines of H<sub>2</sub>O and CO from warm molecular clouds  
*Period Obligations*  
06/01/84-07/31/84 FY85: TOTAL: \$3,960  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Takahashi, T. ARC/Hollenbach, D. 11-Astronomy

**NCC 2-224 University of The Pacific 2032**  
Bone cell activity in altered gravitational states  
*Period Obligations*  
12/01/82-11/30/85 FY85: \$74,091 TOTAL: \$241,657  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Roberts, W. E. ARC/Holton, E. M. 51-Biological Sci

**NCC 2-298 University of The Pacific 2033**  
Analysis of holographic interferograms of aerodynamic models in a wind tunnel  
*Period Obligations*  
05/01/84-09/30/85 FY85: \$825 TOTAL: \$27,967  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Perry, R. L. ARC/Lee, G. 41-Aero Engr

**NCC 2-357 University of The Pacific 2034**  
Flow unsteadiness effects on boundary layers in support of rotorcraft and x-wing technology  
*Period Obligations*  
10/01/85-07/31/85 FY85: \$66,847 TOTAL: \$66,847  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Murthy, S. V. ARC/Steinle, F. W. 41-Aero Engr

**NAG 1-580 University of Redlands 2035**  
Wavelength control of semiconductor lasers  
*Period Obligations*  
04/01/85-03/31/86 FY85: \$50,000 TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wang, S. LARC/Hendricks, H. D. 45-Elec Engr  
LARC/Benz, H.

**NAS 8-34340 University of San Francisco 2036**  
Heavy particle, passive, personnel dosimetry using, etched particles  
*Period Obligations*  
05/28/81-07/16/86 FY85: \$94,600 TOTAL: \$169,600  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Benton, E. V. MSFC/Parnell, T. A. 13-Physics  
MSFC/Watts, J. W.

**NAS 9-15152 University of San Francisco 2037**  
Automated analysis system for HZE particle trace dosimeters  
*Period Obligations*  
02/01/77-12/01/85 FY85: TOTAL: \$808,607  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Benton, E. V. JSC/Richmond, R. G. 56-Medical Sciences

**NAS 9-15337 University of San Francisco 2038**  
Definition of Spacelab I experiment on high energy particle dosimetry  
*Period Obligations*  
04/01/77-04/01/85 FY85: TOTAL: \$103,655  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Benton, E. V. JSC/Peck, E. E. 13-Physics

**NAS 9-17389 University of San Francisco 2039**  
Support for NASA ground-based radiological experiments  
*Period Obligations*  
01/01/85-12/31/86 FY85: \$112,000 TOTAL: \$112,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Benton, E. V. JSC/Richmond, R. G. 51-Biological Sci

**NCC 2-85 University of San Francisco 2040**  
Structure and function of isozymes: Evolutionary aspects and role of oxygen in eukaryotic organisms  
*Period Obligations*  
06/01/80-02/14/85 FY85: \$13,295 TOTAL: \$216,253  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Brown, R. J. ARC/Klein, H. P. 51-Biological Sci  
Satyanarayana, T. ARC/Ferrandin, J.

**NCC 2-135 University of San Francisco 2041**  
Early cytological responses of cortical and trabecular bone to immobilization and the histopathogenesis of disuse osteoporosis in the restraint monkey model  
*Period Obligations*  
07/01/81-08/31/85 FY85: \$37,342 TOTAL: \$165,301  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Brown, R. J. ARC/Young, D. R. 56-Medical Sciences

**NCC 2-354 University of San Francisco 2042**  
Neural and hormonal mechanisms affecting adrenal responses  
*Period Obligations*  
08/01/85-10/31/85 FY85: \$8,000 TOTAL: \$8,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Dallman, M. F. ARC/Danellis, J. V. 51-Biological Sci  
ARC/Keil, L. C.

**NAG 3-143 University of Santa Clara 2043**  
Research and development of heat alcohol fuel usage in automobiles  
*Period Obligations*  
11/17/80-05/24/84 FY85: TOTAL: \$1,020,826  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Pefley, R. K. LERC/Clark, J. S. 46-Mech Engr  
Browning, L.

**NAG 3-212 University of Santa Clara 2044**  
Correlation of single and multi-state data to improved design and analysis models for axial compressors  
*Period Obligations*  
11/24/81-11/22/83 FY85: TOTAL: \$68,548  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Roberts, W. B. LERC/Sandercock, D. M. 41-Aero Engr  
Saad, M. A. LERC/Crouse, J. E.

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NCA 2-48 University of Santa Clara 2045**  
Analytic study of chaotic behavior of some nonlinear dynamical systems

Period	Obligations	
06/01/85-05/31/86	FY85: \$40,000	TOTAL: \$40,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Unal, A.	ARC/Tobak, M.	41-Aero Engr

**NCA 2-685402 University of Santa Clara 2052**  
Preliminary investigation of communication techniques for local and remote access to image databases

Period	Obligations	
04/01/84-12/31/85	FY85: \$4,000	TOTAL: \$24,359
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Danielson, R.	ARC/Likens, W. C.	22-Computer Science

**NCA 2-50 University of Santa Clara 2046**  
The isolation of diverse metabolic types of extreme halophiles

Period	Obligations	
06/01/85-05/31/87	FY85: \$16,144	TOTAL: \$16,144
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tomlinson, G. A.	ARC/Hochstein, L. I.	51-Biological Sci
	ARC/Jahnke, L. L.	

**NCA 2-685501 University of Santa Clara 2053**  
Improvement of a mass spectrometer system to produce computerized output from laser-vaporized materials

Period	Obligations	
10/01/84-09/30/86	FY85: \$12,417	TOTAL: \$27,361
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yang, C. Y.	ARC/Lincoln, K. A.	47-Materials Engr

**NCA 2-685002 University of Santa Clara 2047**  
Enzyme-linked immunosorbent assay (ELISA) for detecting upper respiratory tract infection

Period	Obligations	
10/01/79-03/31/85	FY85:	TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Caren, L. D.	ARC/Mandel, A. D.	51-Biological Sci

**NCA 2-685502 University of Santa Clara 2054**  
Investigation into computer networking research acids

Period	Obligations	
10/01/84-06/30/85	FY85: \$9,321	TOTAL: \$20,761
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Alkhatib, H. S.	ARC/Jones, H. W., Jr.	22-Computer Science

**NCA 2-685301 University of Santa Clara 2048**  
Image display and analysis system

Period	Obligations	
12/01/82-11/30/84	FY85: \$4,323	TOTAL: \$16,966
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Alkhatib, H.	ARC/Jones, H. W., Jr.	22-Computer Science

**NCC 2-16 University of Santa Clara 2055**  
The effect of boundary conditions on finite difference solutions of fluid flow problems

Period	Obligations	
07/01/79-10/31/84	FY85:	TOTAL: \$198,476
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Vinokur, M.	ARC/Lomax, H.	21-Mathematics

**NCA 2-685302 University of Santa Clara 2049**  
Fire protection studies of materials used for acoustic insulation in aircraft walls

Period	Obligations	
04/01/83-09/30/85	FY85:	TOTAL: \$32,627
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Saad, M. A.	ARC/Altman, R. L.	12-Chemistry

**NCC 2-49 University of Santa Clara 2056**  
An analysis of anticipated physcosocial requirements for future space flight

Period	Obligations	
11/01/79-09/30/84	FY85:	TOTAL: \$24,957
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Akins, F. R.	ARC/Connors, M.	61-Biol Aspects

**NCA 2-685304 University of Santa Clara 2050**  
Investigation into micro-computer communication via satellite

Period	Obligations	
08/08/83-12/31/84	FY85:	TOTAL: \$9,147
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Alkhatib, H. S.	ARC/Jones, H. W., Jr.	22-Computer Science

**NCC 2-60 University of Santa Clara 2057**  
Wind tunnel simulations of Martian sand storms

Period	Obligations	
02/01/80-11/30/84	FY85:	TOTAL: \$271,083
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Greeley, R.	ARC/Margozzi, A. P.	99-Multi-Discip
Leach, R.		

**NCA 2-685401 University of Santa Clara 2051**  
Methyl transferases in denitrifying bacteria

Period	Obligations	
06/01/84-05/31/85	FY85:	TOTAL: \$19,143
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tomlinson, G. A.	ARC/Hochstein, L. I.	51-Biological Sci

**NCC 2-128 University of Santa Clara 2058**  
Visual prosthetic devices using texture analysis

Period	Obligations	
06/15/81-12/31/85	FY85: \$31,852	TOTAL: \$152,742
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Alkhatib, H. S.	ARC/Grant, T. L.	45-Elec Engr
	ARC/Lum, H.	

# **NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)**

**NCC 2-130**                      **University of Santa Clara**                      **2059**  
Interpretation of Pioneer Venus orbiter data (PVOD) with the two-dimensional ionosphere model

Period	Obligations	
06/01/81-11/30/85	FY85: \$13,400	TOTAL: \$55,187
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McCormick, P. T.	ARC/Whitten, R. C.	19-Phys Sci, NEC

**NCC 2-166**                      **University of Santa Clara**                      **2060**  
Model reactions for prebiotic translation in fluctuating clay environments

Period	Obligations	
01/01/82-12/31/85	FY85: \$99,500	TOTAL: \$238,140
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
White, D. H.	ARC/Chang, S.	12-Chemistry

**NCC 2-180**                      **University of Santa Clara**                      **2061**  
Growth hormone secretion during space flight and evaluation of the physiological responses of animals held in the research animal holding facility (RAHF)

Period	Obligations	
03/01/82-12/31/85	FY85: \$230,589	TOTAL: \$403,570
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fast, T. R.	ARC/Grindeland, R. E.	51-Biological Sci
	ARC/Oyama, J.	

**NCC 2-191**                      **University of Santa Clara**                      **2062**  
Studies in helicopter noise

Period	Obligations	
04/28/82-11/27/84	FY85:	TOTAL: \$149,507
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Aggarwal, H. A.	ARC/Davis, S. S.	41-Aero Engr

**NCC 2-271**                      **University of Santa Clara**                      **2063**  
Organic molecules on meteoritic solid substrates ammonium carbonate ferrous sulfide and clays

Period	Obligations	
06/01/83-09/30/86	FY85: \$5,547	TOTAL: \$14,783
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sweeney, M. A.	ARC/Lawless, J. G.	12-Chemistry
	ARC/Hart, S. G.	

**NAG 1-420**                      **University of Southern California**                      **2064**  
Near field pressure fluctuations in a circular jet

Period	Obligations	
11/04/83-11/03/85	FY85:	TOTAL: \$113,440
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ho, C. M.	LARC/Yu, J. C.	41-Aero Engr

**NAG 1-471**                      **University of Southern California**                      **2065**  
Evaluation of a pulse control law for flexible spacecraft

Period	Obligations	
06/01/84-05/31/85	FY85:	TOTAL: \$19,890
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Masri, S. F.	LARC/Young, J. W.	42-Astro Engr
Bekey, G. A.		

**NAG 2-146**                      **University of Southern California**                      **2066**  
Pioneer 10/11 data analysis of the ultraviolet photometry experiment

Period	Obligations	
10/01/81-02/28/86	FY85: \$155,213	TOTAL: \$506,841
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Judge, D. L.	ARC/Fimmel, R. O.	19-Phys Sci, NEC

**NAG 2-360**                      **University of Southern California**                      **2067**  
Research in analog MOS integrated circuits

Period	Obligations	
07/01/85-06/30/86	FY85: \$49,009	TOTAL: \$49,009
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Temes, G. C.	ARC/Bogue, R. K.	46-Mech Engr
	ARC/Illiff, K. W.	

**NAG 3-529**                      **University of Southern California**                      **2068**  
Experimental study of superlattice structures for photovoltaic energy conversion

Period	Obligations	
03/15/84-03/13/86	FY85: \$60,000	TOTAL: \$100,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dapkus, P. D.	LERC/Brinker, D. J.	45-Elec Engr
	LERC/Flood, D. J.	

**NAG 5-457**                      **University of Southern California**                      **2069**  
Simultaneous observations of selected astronomical spectra

Period	Obligations	
08/01/84-07/31/86	FY85: \$5,000	TOTAL: \$12,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Barry, D. C.	GSFC/Kondo, Y.	11-Astronomy
Holberg, J.		
Polidan, R. S.		

**NAGW 13**                      **University of Southern California**                      **2070**  
Observational and theoretical studies of solar P and G mode oscillations

Period	Obligations	
01/01/80-04/30/86	FY85: \$95,000	TOTAL: \$515,496
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rhodes, E. J.	HQ-EZ/Spicer, D. S.	13-Physics

**NAGW 43**                      **University of Southern California**                      **2071**  
Creep of orthoenstatite at high temperature and low strain rates

Period	Obligations	
03/01/80-02/29/84	FY85:	TOTAL: \$172,843
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sammis, C. G.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	

**NAGW 106**                      **University of Southern California**                      **2072**  
A study of the Io plasma torus

Period	Obligations	
11/01/80-12/31/84	FY85:	TOTAL: \$185,736
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shemansky, D. E.	HQ-EL/Brinton, H. C.	11-Astronomy
	HQ-EL/Brunk, W. E.	

## NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

**NAGW 163**      **University of Southern California**      **2073**  
A proposed study of the temporal morphology of the Io plasma  
utilizing the Pioneer and Voyager extreme ultraviolet data

Period	Obligations	
04/01/81-03/31/86	FY85: \$60,119	TOTAL: \$242,672
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Judge, D. L.	HQ-EL/Brinton, H. C.	31-Atmos Sci
Broadfoot, L.	HQ-EL/Quaide, W. L.	
Kunc, J.		

**NAGW 316**      **University of Southern California**      **2074**  
Particle excitation, airglow and H2 vibrational disequilibrium in  
the atmosphere of Jupiter

Period	Obligations	
04/01/82-06/30/84	FY85:	TOTAL: \$78,848
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shemansky, D. E.	HQ-EL/Brinton, H. C.	11-Astronomy
	HQ-EL/Brunk, W. E.	

**NAGW 317**      **University of Southern California**      **2075**  
Fluorescence studies of phytoplankton pigments: A comparison  
of classical and laser spectroscopy

Period	Obligations	
04/01/82-12/31/85	FY85: \$74,720	TOTAL: \$169,465
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kiefer, D. A.	HQ-EE/Esaias, W. E.	33-Oceanography
Soohoo, J. B.	HQ-EE/Wilson, W. S.	

**NAGW 335**      **University of Southern California**      **2076**  
Acoustic applications to ocean productivity: Instrument develop-  
ment and testing

Period	Obligations	
04/15/82-10/14/84	FY85:	TOTAL: \$103,638
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pieper, R. E.	HQ-EE/Esaias, W. E.	33-Oceanography
	HQ-EE/Wilson, W. S.	

**NASW 3918**      **University of Southern California**      **2077**  
Utilization of technical coordinator in IAC continued operations

Period	Obligations	
03/01/85-03/31/86	FY85: \$369,584	TOTAL: \$645,321
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mixer, R.	HQ-IU/Bivins, R. G.	41-Aero Engr
King, R.	HQ-IU/Ault, L. A.	

**NGR 05-018-180**      **University of Southern California**      **2078**  
Photon-molecule interaction studies of the atmospheric gases

Period	Obligations	
08/31/72-04/30/86	FY85: \$75,000	TOTAL: \$811,107
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Judge, D. L.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NSG 5108**      **University of Southern California**      **2079**  
Rocket experiments to measure the solar intensity and profile

Period	Obligations	
04/01/76-12/31/85	FY85: \$107,463	TOTAL: \$829,536
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Judge, D. L.	GSFC/Early, L. J.	13-Physics
Ogawa, H. S.	GSFC/Pless, R. H.	

**NSG 5422**      **University of Southern California**      **2080**  
A comparative study of the far ultraviolet spectra of BE stars

Period	Obligations	
10/15/79-09/05/86	FY85: \$20,295	TOTAL: \$75,840
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Peters, G. J.	GSFC/Kondo, Y.	11-Astronomy
Polidan, R. S.		

**NSG 7535**      **University of Southern California**      **2081**  
Development of room temperature mercuric iodide X-ray detec-  
tors for in-site analysis of extra terrestrial objects

Period	Obligations	
01/26/79-03/31/85	FY85: \$60,000	TOTAL: \$588,513
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dabrowski, A. J.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/Vescelus, F.	

**NAGW 517**      **Whittier College**      **2082**  
Periglacial and glacial analogs for Martian land forms

Period	Obligations	
11/01/83-10/31/84	FY85:	TOTAL: \$13,414
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rossbacher, R. A.	HQ-EL/Boyce, J. M.	32-Geological Sci

## COLORADO

**NAG 1-572**      **Colorado College**      **2083**  
Cite-2 odd-nitrogen intercomparison nitric acid filter-collection  
method

Period	Obligations	
03/04/85-03/03/86	FY85: \$44,008	TOTAL: \$44,008
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Huebert, B. J.	LARC/Gregory, G. L.	31-Atmos Sci

**NAG 3-197**      **Colorado School of Mines**      **2084**  
Studies of the mechanisms of jet fuel/instability

Period	Obligations	
08/01/81-03/31/85	FY85:	TOTAL: \$172,180
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Daniel, S. R.	LERC/Bittker, D. A.	12-Chemistry

**NAG 1-436**      **Colorado State University**      **2085**  
Nonlinear methods in spacecraft dynamics and control

Period	Obligations	
12/13/83-03/12/86	FY85: \$54,939	TOTAL: \$94,939
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dwyer, T. A.	LARC/Juang, J. N.	42-Astro Engr
	LARC/Hanks, B.	

**NAG 1-554**      **Colorado State University**      **2086**  
Observations of upper and middle tropospheric clouds

Period	Obligations	
01/01/85-12/31/85	FY85: \$60,000	TOTAL: \$60,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cox, S. K.	LARC/McDougal, D. S.	31-Atmos Sci
	LARC/Suttles, J. T.	

# **NASA'S UNIVERSITY PROGRAM** **COLORADO (Continued)**

**NAG 2-157** **Colorado State University** **2087**  
Experiments with phase transitions at very high pressure

Period	Obligations	
01/01/82-12/31/85	FY85: \$1,500	TOTAL: \$152,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Spain, I. L.	ARC/Nelson, H. G.	47-Materials Engr

**NAG 5-387** **Colorado State University** **2094**  
Investigations of the variability of cloud reflected radiance fields

Period	Obligations	
01/01/84-12/31/85	FY85: \$50,053	TOTAL: \$100,075
Prin. Invest.	NASA Tech. Officer	CASE Category
Cox, S. K.	GSFC/King, M. D.	31-Atmos Sci
Davis, J. M.		

**NAG 3-539** **Colorado State University** **2088**  
Effects of turbulence on laminar separation on aerodynamic surfaces such as airfoils and compressor blading

Period	Obligations	
03/25/84-06/15/84	FY85:	TOTAL: \$2,602
Prin. Invest.	NASA Tech. Officer	CASE Category
Sadeh, W. Z.	LERC/Sockol, P. M.	41-Aero Engr

**NAG 9-10** **Colorado State University** **2095**  
Life spans of skin fibroblasts from irradiated primates

Period	Obligations	
06/16/80-12/01/85	FY85: \$57,000	TOTAL: \$309,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Lett, J. T.	JSC/Nachtwey, D. S.	54-Env Biology
Cox, A. B.		
Lee, A. C.		

**NAG 3-633** **Colorado State University** **2089**  
Development and in-site characterization of dielectric layers for use with compound semiconductors

Period	Obligations	
04/01/85-03/31/86	FY85: \$75,000	TOTAL: \$75,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Lile, D. L.	LERC/Pouch, J. J.	13-Physics

**NAG 9-120** **Colorado State University** **2096**  
Hollow cathode plasma coupling study

Period	Obligations	
08/01/85-07/31/86	FY85: \$29,866	TOTAL: \$29,866
Prin. Invest.	NASA Tech. Officer	CASE Category
Wilbur, P. J.	JSC/McCoy, J. E.	46-Mech Engr

**NAG 5-136** **Colorado State University** **2090**  
Atmospheric planetary wave response to extreme forcing

Period	Obligations	
02/01/81-09/30/84	FY85:	TOTAL: \$209,034
Prin. Invest.	NASA Tech. Officer	CASE Category
Stevens, D. E.	GSFC/Shukla, J.	31-Atmos Sci
Reiter, E. R.	GSFC/Randall, D.	

**NAGW 504** **Colorado State University** **2097**  
Investigations of severe/tornadic thunderstorm development and evaluation based on satellite and ave/sesame/vas data

Period	Obligations	
09/01/83-08/31/84	FY85:	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Purdom, J. F.	HQ-EE/Dodge, J. C.	31-Atmos Sci
Vonder Haar, T. H.		

**NAG 5-276** **Colorado State University** **2091**  
Reflectance modeling for predicting bidirectional reflectance distribution patterns

Period	Obligations	
09/15/82-12/31/85	FY85:	TOTAL: \$272,215
Prin. Invest.	NASA Tech. Officer	CASE Category
Smith, J. A.	GSFC/Kimes, D. S.	55-Agriculture Sci

**NAGW 535** **Colorado State University** **2098**  
Channel patterns on Mars

Period	Obligations	
03/01/84-02/28/86	FY85: \$30,023	TOTAL: \$57,993
Prin. Invest.	NASA Tech. Officer	CASE Category
Schumm, S. A.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAG 5-299** **Colorado State University** **2092**  
Research relative to improving tropical cyclone forecasting

Period	Obligations	
03/01/83-06/30/85	FY85:	TOTAL: \$100,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Gray, W. M.	GSFC/Rodgers, E.	31-Atmos Sci
	GSFC/Adler, R.	

**NAGW 601** **Colorado State University** **2099**  
Surface energy fluxes in complex terrain

Period	Obligations	
02/01/84-01/31/86	FY85:	TOTAL: \$70,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Reiter, E. R.	HQ-EE/Curran, R. J.	31-Atmos Sci
Cox, S. K.	HQ-EE/Theon, J. S.	

**NAG 5-359** **Colorado State University** **2093**  
Sea breeze induced mesoscale systems and severe weather

Period	Obligations	
08/01/83-11/30/85	FY85: \$42,678	TOTAL: \$202,678
Prin. Invest.	NASA Tech. Officer	CASE Category
Pielke, R. A.	GSFC/Keyser, D.	31-Atmos Sci
	GSFC/Uccellini, L.	

**NAS 1-16465** **Colorado State University** **2100**  
Scientific investigations for the Earth radiation budget experiment (ERBE)

Period	Obligations	
09/30/80-09/30/85	FY85: \$50,805	TOTAL: \$205,805
Prin. Invest.	NASA Tech. Officer	CASE Category
Vonderhaar, T. H.	LARC/Hall, J. B.	31-Atmos Sci
	LARC/Barkstrom, B. R.	

# **NASA'S UNIVERSITY PROGRAM** **COLORADO (Continued)**

**NAS 8-36354** **Colorado State University** **2101**  
Measurement of terms and parameters in turbulent models  
*Period* *Obligations*  
08/13/85-08/12/88 FY85: \$100,000 TOTAL: \$100,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sandborn, V. A. MSFC/Campbell, W. 46-Mech Engr  
MSFC/Heaman, J.

**NAS 8-36472** **Colorado State University** **2102**  
Investigations of severe tornadic thunderstorm development and evaluation based on satellite and ave se same vas data  
*Period* *Obligations*  
07/31/85-07/30/87 FY85: \$60,000 TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Purdom, J. F. MSFC/Green, W. M. 31-Atmos Sci  
Vonder Haar, T. H.  
Pjclkc, R. A.

**NAS 9-17168** **Colorado State University** **2103**  
Services of SL-4 payload specialist  
*Period* *Obligations*  
01/20/84-06/30/86 FY85: \$97,406 TOTAL: \$272,406  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Phillips, R. W. JSC/Harnage, M. J., Jr. 49-Engr, NEC

**NAS10-10933** **Colorado State University** **2104**  
The design of a plant support system suitable for long term plant investigations in space  
*Period* *Obligations*  
01/09/84-12/31/84 FY85: TOTAL: \$40,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bausch, W. C. KSC/Knott, W. M. 55-Agriculture Sci  
Wright, B. D.

**NCA 2-165201** **Colorado State University** **2105**  
A multilevel scheme for the Cauchy-Riemann equations  
*Period* *Obligations*  
06/01/82-03/31/84 FY85: TOTAL: \$30,360  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Thomas, J. W. ARC/Lomax, H. 21-Mathematics

**NCA 2-165501** **Colorado State University** **2106**  
An investigation of CFD algorithms for vector processors  
*Period* *Obligations*  
10/01/84-09/30/86 FY85: \$25,000 TOTAL: \$51,900  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Prenter, P. M. ARC/Murphy, J. 21-Mathematics

**NCC 2-344** **Colorado State University** **2107**  
Remote access to NAS: Supercomputing in a university environment  
*Period* *Obligations*  
04/01/85-03/31/86 FY85: \$90,826 TOTAL: \$90,826  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Johnson, G. M. ARC/Bailey, F. R. 22-Computer Science

**NGR 06-002-112** **Colorado State University** **2108**  
An experimental investigation of hollow cathode discharge start-up and operation  
*Period* *Obligations*  
12/21/70-10/28/85 FY85: \$96,678 TOTAL: \$1,100,765  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wilbur, P. J. LERC/Rawlin, V. K. 46-Mech Engr

**NGT 06-002-801** **Colorado State University** **2109**  
NASA graduate student researchers program  
*Period* *Obligations*  
05/28/84-09/30/85 FY85: TOTAL: \$12,200  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kaufman, H. R. HQ-LB/Owens, F. C. 46-Mech Engr

**NGT 06-002-802** **Colorado State University** **2110**  
NASA graduate student training program  
*Period* *Obligations*  
11/01/84-12/31/85 FY85: \$125,000 TOTAL: \$125,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Johnson, G. M. HQ/Graves, R. 22-Computer Science

**NSG 1594** **Colorado State University** **2111**  
Approaching the ultimate velocimeter: Laser techniques for measuring molecular flows  
*Period* *Obligations*  
02/01/79-02/28/86 FY85: \$39,533 TOTAL: \$400,633  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
She, C. Y. LARC/Exton, R. J. 13-Physics  
Lee, S. A. LARC/Hillard, M. E.

**NSG 3011** **Colorado State University** **2112**  
Experimental investigations of argon and xenon ion sources  
*Period* *Obligations*  
07/01/74-03/31/86 FY85: \$14,852 TOTAL: \$691,109  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kaufman, H. R. LERC/Rawlin, V. K. 13-Physics  
Robinson, R. S.

**NAG 1-437** **University of Colorado - Boulder** **2113**  
Design and chemical synthesis of iodine-containing molecules for application to solar-pumped I lasers  
*Period* *Obligations*  
01/01/84-12/31/85 FY85: \$55,513 TOTAL: \$155,513  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Leone, S. R. LARC/Jalufka, N. W. 13-Physics  
Shiner, C. S. LARC/Conway, E. J.

**NAG 1-600** **University of Colorado - Boulder** **2114**  
Innovative methods for the measurement of I \* quantum yields and kinetics by diode laser gain-versus-absorption  
*Period* *Obligations*  
07/01/85-06/30/86 FY85: \$54,000 TOTAL: \$54,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Leone, S. R. LARC/Jalufka, N. W. 19-Phys Sci, NEC  
LARC/Conway, E. J.

# **NASA'S UNIVERSITY PROGRAM** **COLORADO (Continued)**

**NAG 2-278 University of Colorado - Boulder 2115**  
 Selection principles and pattern formation of fluid mechanics and nonlinear shell theory

Period	Obligations	
03/01/84-02/28/86	FY85: \$28,000	TOTAL: \$53,471
Prin. Invest.	NASA Tech. Officer	CASE Category
Sather, D. P.	ARC/Chapman, G. T.	41-Aero Engr
	ARC/Tobak, M.	

**NAG 3-342 University of Colorado - Boulder 2116**  
 Thermocapillary and diffusocapillary migration of a fluid drop

Period	Obligations	
02/15/83-08/14/84	FY85: \$4,175	TOTAL: \$19,999
Prin. Invest.	NASA Tech. Officer	CASE Category
Sani, R. L.	LERC/Chai, A. T.	13-Physics

**NAG 3-493 University of Colorado - Boulder 2117**  
 Thermocapillary and diffusocapillary migration of a fluid drop

Period	Obligations	
11/30/83-11/28/85	FY85:	TOTAL: \$102,944
Prin. Invest.	NASA Tech. Officer	CASE Category
Sani, R. L.	LERC/Chai, A. T.	13-Physics

**NAG 5-78 University of Colorado - Boulder 2118**  
 Spectroscopic observations of selected stellar systems

Period	Obligations	
07/01/80-05/31/86	FY85: \$79,800	TOTAL: \$199,260
Prin. Invest.	NASA Tech. Officer	CASE Category
Garmany, K.	GSFC/Kondo, Y.	11-Astronomy
Conti, P. S.		
Massey, P.		

**NAG 5-82 University of Colorado - Boulder 2119**  
 International Ultraviolet Explorer (IUE) studies of cool stars

Period	Obligations	
07/01/80-03/31/86	FY85: \$118,720	TOTAL: \$410,970
Prin. Invest.	NASA Tech. Officer	CASE Category
Linsky, J. L.	GSFC/Kondo, Y.	11-Astronomy
Ambruster, C.		
Bookbinder, J.		

**NAG 5-96 University of Colorado - Boulder 2120**  
 Study of reflection grating spectrometers for X-ray astronomy

Period	Obligations	
09/01/80-04/30/86	FY85: \$246,851	TOTAL: \$746,099
Prin. Invest.	NASA Tech. Officer	CASE Category
Cash, W. C.	GSFC/Early, L. J.	11-Astronomy
	GSFC/Pless, R. H.	

**NAG 5-142 University of Colorado - Boulder 2121**  
 Research relative to short-term cryosphere cloud interactions near the snow/ice limit

Period	Obligations	
03/01/81-03/14/84	FY85:	TOTAL: \$110,545
Prin. Invest.	NASA Tech. Officer	CASE Category
Barry, R. G.	GSFC/Zwally, H. J.	31-Atmos Sci
	GSFC/Parkinson, C. L.	

**NAG 5-193 University of Colorado - Boulder 2122**  
 Spectroscopic studies of interstellar matter and stellar mass loss

Period	Obligations	
07/01/81-04/30/86	FY85: \$78,300	TOTAL: \$213,824
Prin. Invest.	NASA Tech. Officer	CASE Category
Shull, J. M.	GSFC/Kondo, Y.	11-Astronomy
Brugel, E. W.		

**NAG 5-199 University of Colorado - Boulder 2123**  
 International Ultraviolet Experiment studies

Period	Obligations	
07/15/81-04/30/86	FY85: \$59,600	TOTAL: \$212,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Ayres, T. R.	GSFC/Kondo, Y.	11-Astronomy
Rottman, G. C.		
Brown, A.		

**NAG 5-212 University of Colorado - Boulder 2124**  
 Research relative to middle atmosphere solar irradiance rocket measurements

Period	Obligations	
10/15/81-01/31/86	FY85: \$148,314	TOTAL: \$595,372
Prin. Invest.	NASA Tech. Officer	CASE Category
Mount, G. H.	GSFC/Mentall, J. E.	31-Atmos Sci
Rottman, G. J.		

**NAG 5-350 University of Colorado - Boulder 2125**  
 Analysis of selected symbiotic stars

Period	Obligations	
08/01/83-10/31/85	FY85: \$5,000	TOTAL: \$20,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Brugal, E. W.	GSFC/Kondo, Y.	11-Astronomy
Bothun, G.		

**NAG 5-412 University of Colorado - Boulder 2126**  
 The study of extreme ultraviolet observatory designs

Period	Obligations	
04/01/84-09/30/86	FY85: \$49,998	TOTAL: \$73,313
Prin. Invest.	NASA Tech. Officer	CASE Category
Cash, W. C.	GSFC/Osantowski, J. F.	11-Astronomy
Walter, F.		
Snow, T. P.		

**NAG 5-417 University of Colorado - Boulder 2127**  
 Empirical and modeled synoptic cloud climatology of the arctic ocean

Period	Obligations	
04/01/84-04/14/86	FY85: \$78,535	TOTAL: \$114,535
Prin. Invest.	NASA Tech. Officer	CASE Category
Crane, R. G.	GSFC/Cahalan, R. F.	31-Atmos Sci
Barry, R. G.		

**NAG 5-421 University of Colorado - Boulder 2128**  
 Studies of selected global regions in Seyfert galaxies

Period	Obligations	
07/01/84-12/31/85	FY85: \$6,986	TOTAL: \$12,186
Prin. Invest.	NASA Tech. Officer	CASE Category
Begelman, M. C.	GSFC/Kondo, Y.	11-Astronomy
Shull, J. M.		

**NASA'S UNIVERSITY PROGRAM  
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**NAG 5-429 University of Colorado - Boulder 2129**  
Investigation of variable star asymmetries

Period	Obligations	
07/01/84-06/30/86	FY85: \$24,047	TOTAL: \$24,047
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Walter, F. M.	GSFC/Kondo, Y.	11-Astronomy
Bopp, B. W.		
Linsky, J. L.		

**NAG 8-477 University of Colorado - Boulder 2136**  
The corona of Procyon

Period	Obligations	
06/01/84-05/31/85	FY85:	TOTAL: \$8,806
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Linsky, J. L.	MSFC/Johnson, W. G.	11-Astronomy
Walter, F. M.		
Brown, A.		

**NAG 5-433 University of Colorado - Boulder 2130**  
Ultraviolet spectra of astronomical sources

Period	Obligations	
08/01/84-07/31/86	FY85: \$36,600	TOTAL: \$50,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fesen, R. A.	GSFC/Kondo, Y.	11-Astronomy
Wu, C. C.		
Leventhal, M.		

**NAG 8-508 University of Colorado - Boulder 2137**  
Low mass pre-main sequence stars near dark clouds

Period	Obligations	
01/01/85-12/31/85	FY85: \$20,625	TOTAL: \$20,625
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Walter, F. M.	MSFC/Johnson, W. G.	11-Astronomy

**NAG 5-453 University of Colorado - Boulder 2131**  
Crystal dynamics of the eastern Mediterranean

Period	Obligations	
07/15/84-11/30/85	FY85:	TOTAL: \$25,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wyss, M.	GSFC/Mead, G. D.	32-Geological Sci

**NAG 8-510 University of Colorado - Boulder 2138**  
A survey of X-ray variability of late type stars and the coronal emission of G and K supergiants and bright giants

Period	Obligations	
01/01/85-12/31/85	FY85: \$21,096	TOTAL: \$21,096
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Linsky, J. L.	MSFC/Johnson, W. G.	11-Astronomy
Ambruster, C.		
Drake, S.		

**NAG 5-485 University of Colorado - Boulder 2132**  
Studies of polar motion, Earth rotation and plate motion

Period	Obligations	
12/20/84-12/19/85	FY85: \$54,557	TOTAL: \$54,557
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wahr, J.	GSFC/Mead, G. D.	32-Geological Sci

**NAG 8-538 University of Colorado - Boulder 2139**  
An X-ray study of sigma orionis E and other helium strong bp stars

Period	Obligations	
08/01/85-07/31/86	FY85: \$8,000	TOTAL: \$8,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Linsky, J. L.	MSFC/Johnson, W. G.	11-Astronomy
Abbott, D.		
Brown, A.		

**NAG 5-497 University of Colorado - Boulder 2133**  
Comparison of relativistic effects in barycentric and Earth

Period	Obligations	
02/01/85-01/31/86	FY85: \$19,370	TOTAL: \$19,370
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ashby, N.	GSFC/Mead, G. D.	32-Geological Sci

**NAGW 91 University of Colorado - Boulder 2140**  
Turbulence and wave-particle interactions in solar-terrestrial plasmas

Period	Obligations	
07/01/80-04/30/86	FY85: \$220,000	TOTAL: \$1,300,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dulk, G. A.	HQ-EE/Butler, D. M.	11-Astronomy
Toomre, J.	HQ-EE/Hudson, R. D.	

**NAG 5-513 University of Colorado - Boulder 2134**  
X-ray bright points on the quiet Sun and rapid ultraviolet brightenings in active regions

Period	Obligations	
03/15/85-03/14/86	FY85: \$42,500	TOTAL: \$42,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Toomre, J.	GSFC/Bullock, G. D.	11-Astronomy
Gebbie, K. B.		

**NAGW 155 University of Colorado - Boulder 2141**  
A program to study high altitude cloud distributions for the Jupiter data analysis program

Period	Obligations	
04/01/81-09/30/85	FY85:	TOTAL: \$145,473
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hord, C. W.	HQ-EL/Brinton, H. C.	13-Physics
West, R. A.	HQ-EL/Evans, N.	

**NAG 5-574 University of Colorado - Boulder 2135**  
Geodynamical studies of mantle Rheology short and intermediate timescales

Period	Obligations	
06/15/85-06/14/86	FY85: \$45,000	TOTAL: \$45,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yuen, D. A.	GSFC/Welker, J. E.	32-Geological Sci

**NAGW 197 University of Colorado - Boulder 2142**  
Theoretical research programs in physics at planetary atmospheres, radiative transfer theory and data interpretation

Period	Obligations	
07/01/81-05/31/86	FY85: \$50,000	TOTAL: \$223,633
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hord, C. W.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	



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**NAGW 292 University of Colorado - Boulder 2143**  
Studies of odd nitrogen in Earth's atmosphere

Period	Obligations	
01/01/82-02/28/84	FY85:	TOTAL: \$49,992
Prin. Invest.	NASA Tech. Officer	CASE Category
Rusch, D. W.	HQ-EE/Chandra, S.	31-Atmos Sci
	HQ-EE/Watson, R. T.	

**NAGW 343 University of Colorado - Boulder 2144**  
Pulse-counting imaging detector system for solar system studies

Period	Obligations	
07/01/82-10/31/83	FY85: \$40	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Timothy, J. G.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 358 University of Colorado - Boulder 2145**  
The development of mini-microchannel plate detectors for planetary ultraviolet spectroscopy

Period	Obligations	
08/15/82-10/14/84	FY85:	TOTAL: \$152,619
Prin. Invest.	NASA Tech. Officer	CASE Category
Barth, C.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 363 University of Colorado - Boulder 2146**  
Pilot study and evaluation of a SMMR-derived sea ice data base

Period	Obligations	
07/15/82-06/30/84	FY85:	TOTAL: \$46,766
Prin. Invest.	NASA Tech. Officer	CASE Category
Barry, R. G.	HQ-EE/Thomas, R. H.	33-Oceanography
	HQ-EE/Wilson, W. S.	

**NAGW 389 University of Colorado - Boulder 2147**  
Theoretical research in physics of planetary atmospheres; Global studies of atmospheric constituents and dynamics

Period	Obligations	
11/01/82-03/31/86	FY85: \$71,877	TOTAL: \$291,600
Prin. Invest.	NASA Tech. Officer	CASE Category
Esposito, L.	HQ-EL/Brinton, H. C.	31-Atmos Sci
Stewart, I.	HQ-EL/Brunk, W. E.	

**NAGW 404 University of Colorado - Boulder 2148**  
Magnetic probing of the solar interior

Period	Obligations	
02/01/83-07/31/85	FY85:	TOTAL: \$109,640
Prin. Invest.	NASA Tech. Officer	CASE Category
Zweibel, E.	HQ-E/Rosendhal, J. D.	31-Atmos Sci
	HQ-E/Raney, W. P.	

**NAGW 495 University of Colorado - Boulder 2149**  
The Mars atmospheric structure, water vapor and ozone

Period	Obligations	
09/01/83-02/28/86	FY85: \$35,193	TOTAL: \$89,561
Prin. Invest.	NASA Tech. Officer	CASE Category
Jakosky, B. M.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 552 University of Colorado - Boulder 2150**  
Behaviour of water on Mars

Period	Obligations	
04/01/84-03/31/86	FY85: \$49,410	TOTAL: \$109,407
Prin. Invest.	NASA Tech. Officer	CASE Category
Jakosky, B. M.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 563 University of Colorado - Boulder 2151**  
Two dimensional detector codocon development

Period	Obligations	
12/01/83-05/31/85	FY85:	TOTAL: \$160,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Lawrence, G. M.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 641 University of Colorado - Boulder 2152**  
Cryospheric data management system for DMSP SSIM data management

Period	Obligations	
06/01/84-02/28/86	FY85: \$237,202	TOTAL: \$435,375
Prin. Invest.	NASA Tech. Officer	CASE Category
Barry, R. G.	HQ-EE/Thomas, R. H.	33-Oceanography
	HQ-EE/Wilson, W. S.	

**NAGW 675 University of Colorado - Boulder 2153**  
Basic research involving computational physics and applied physics

Period	Obligations	
10/01/84-09/30/85	FY85: \$30,000	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Norcross, D. W.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
Levine, J.	HQ-EZ/Ormes, J. F.	

**NAGW 740 University of Colorado - Boulder 2154**  
Exploration of the solar-stellar connection at high spectral resolution with ultraviolet spectrometer and polarimeter and studies of thermal bifurcation at the photosphere

Period	Obligations	
04/15/85-03/31/86	FY85: \$34,866	TOTAL: \$34,866
Prin. Invest.	NASA Tech. Officer	CASE Category
Ayres, T. R.	HQ-EZ/Spicer, D. S.	13-Physics

**NAGW 766 University of Colorado - Boulder 2155**  
Theory of spectra formation in astrophysical systems

Period	Obligations	
07/05/85-02/28/86	FY85: \$190,000	TOTAL: \$190,000
Prin. Invest.	NASA Tech. Officer	CASE Category
McCray, R.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

**NAGW 769 University of Colorado - Boulder 2156**  
Studies of the dynamics of outer planet rings

Period	Obligations	
07/01/85-06/30/86	FY85: \$49,934	TOTAL: \$49,934
Prin. Invest.	NASA Tech. Officer	CASE Category
Esposito, L. W.	HQ-EL/Scott, D. H.	32-Geological Sci
	HQ-EL/Boyce, J. M.	

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<b>NAGW 771 University of Colorado - Boulder 2157</b>			
Remote sensing analysis of Mars			
<i>Period</i>	<i>Obligations</i>		
06/01/85-05/31/86	FY85: \$15,838	TOTAL: \$15,838	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Jakosky, B.	HQ-EL/Scott, D. H.	32-Geological Sci	
	HQ-EL/Boyce, J. M.		
<b>NAGW 772 University of Colorado - Boulder 2158</b>			
Investigation of irreversible material exchange induced by planetary waves			
<i>Period</i>	<i>Obligations</i>		
06/01/85-05/31/86	FY85: \$382,800	TOTAL: \$382,800	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Salby, M. L.	HQ-EE/Smith, M. H.	31-Atmos Sci	
	HQ-EE/Butler, D. M.		
<b>NAGW 793 University of Colorado - Boulder 2159</b>			
Temperature dependence of the rate constant and product channels for the bro and cio reaction			
<i>Period</i>	<i>Obligations</i>		
09/01/85-08/31/86	FY85: \$48,073	TOTAL: \$48,073	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Birks, J. W.	HQ-EE/Smith, M. A.	31-Atmos Sci	
	HQ-EE/Demore, W. B.		
<b>NAGW 795 University of Colorado - Boulder 2160</b>			
The comet Halley active monitoring program			
<i>Period</i>	<i>Obligations</i>		
08/01/85-07/31/86	FY85: \$28,049	TOTAL: \$28,049	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Stern, S. A.	HQ-EL/Brinton, H. C.	31-Atmos Sci	
	HQ-EL/Quaide, W. L.		
<b>NAS 2-9477 University of Colorado - Boulder 2161</b>			
Pioneer Venus data analysis of the orbiter ultraviolet spectrometer experiment			
<i>Period</i>	<i>Obligations</i>		
08/30/77-09/30/85	FY85: \$206,346	TOTAL: \$1,520,464	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Stewart, I. A.	ARC/Fimmel, R. O.	19-Phys Sci, NEC	
Thomas, G. E.	ARC/Craig, R.		
<b>NAS 5-11405 University of Colorado - Boulder 2162</b>			
University of Colorado ultraviolet nitric oxide experiment for atmosphere Explorer			
<i>Period</i>	<i>Obligations</i>		
03/17/71-12/31/84	FY85:	TOTAL: \$1,095,632	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Stewart, A. I.	GSFC/Bullock, G. D.	31-Atmos Sci	
<b>NAS 5-26172 University of Colorado - Boulder 2163</b>			
Study of the ultraviolet solar spectral irradiance experiment for the upper atmosphere research satellites (UARS)			
<i>Period</i>	<i>Obligations</i>		
09/23/80-12/31/83	FY85:	TOTAL: \$580,981	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Rottman, G. J.	GSFC/Browne, W. E.	31-Atmos Sci	
London, J.			
<b>NAS 5-26409 University of Colorado - Boulder 2164</b>			
Operation of the IUE Data Center at Boulder			
<i>Period</i>	<i>Obligations</i>		
03/24/81-03/31/85	FY85:	TOTAL: \$409,269	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Snow, T. P., Jr.	GSFC/Mead, J. M.	11-Astronomy	
<b>NAS 5-27236 University of Colorado - Boulder 2165</b>			
Crustal dynamics investigation of the eastern Mediterranean			
<i>Period</i>	<i>Obligations</i>		
05/06/82-07/31/84	FY85:	TOTAL: \$50,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wyss, M.	GSFC/Mead, G. D.	32-Geological Sci	
<b>NAS 5-27263 University of Colorado - Boulder 2166</b>			
A study of the response of upper atmosphere parameters to variations of solar activity			
<i>Period</i>	<i>Obligations</i>		
07/07/82-12/31/85	FY85:	TOTAL: \$109,295	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
London, J.	GSFC/Rouzer, L.	31-Atmos Sci	
<b>NAS 5-27644 University of Colorado - Boulder 2167</b>			
Studies of polar motion, Earth rotation and plate motion CD-73			
<i>Period</i>	<i>Obligations</i>		
05/17/83-03/31/85	FY85:	TOTAL: \$69,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Morgan, W. J.	GSFC/Mead, G. D.	32-Geological Sci	
Wahr, J. M.			
<b>NAS 5-27671 University of Colorado - Boulder 2168</b>			
Constraints on geomagnetic secular variation modeling from electromagnetism and fluid dynamics of Earth's core			
<i>Period</i>	<i>Obligations</i>		
05/18/83-10/17/84	FY85:	TOTAL: \$34,306	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Unavailable	GSFC/Kouns, C. W.	32-Geological Sci	
	GSFC/Langel, R. A.		
<b>NAS 5-27750 University of Colorado - Boulder 2169</b>			
Solar stellar irradiance comparison experiment (solstice) for UARS			
<i>Period</i>	<i>Obligations</i>		
10/01/83-06/01/88	FY85: \$1,025,000	TOTAL: \$1,745,336	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Rottman, G.	GSFC/Piterski, N.	31-Atmos Sci	
	GSFC/Donley, J.		
<b>NAS 5-28037 University of Colorado - Boulder 2170</b>			
Studies of the Solar Mesosphere Explorer horizon sensor performance and dynamics			
<i>Period</i>	<i>Obligations</i>		
01/10/84-03/09/85	FY85:	TOTAL: \$71,426	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lawrence, G. M.	GSFC/Stengle, T. H.	31-Atmos Sci	
Cowley, J. R.			

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**NAS 5-28196 University of Colorado - Boulder 2171**  
Study of relationship between solar dynamics and g-modes

Period	Obligations	
08/10/84-02/10/87	FY85: \$19,470	TOTAL: \$37,620
Prin. Invest.	NASA Tech. Officer	CASE Category
Blizard, J.	GSFC/Wolff, C. L.	11-Astronomy
Cox, J.	GSFC/Hartle, R. E.	

**NAS 5-28617 University of Colorado - Boulder 2172**  
Study of constraints on geomagnetic secular variation modeling from electromagnetism and fluid dynamics of the Earth's core

Period	Obligations	
11/09/84-11/09/85	FY85: \$31,051	TOTAL: \$31,051
Prin. Invest.	NASA Tech. Officer	CASE Category
Unavailable	GSFC/Kouns, C. W.	32-Geological Sci
	GSFC/Langel, R. A.	

**NAS 5-28731 University of Colorado - Boulder 2173**  
Operation of the regional data center for IUE users

Period	Obligations	
04/01/85-04/01/86	FY85: \$119,775	TOTAL: \$119,775
Prin. Invest.	NASA Tech. Officer	CASE Category
Snow, T.	GSFC/Mead, J. M.	11-Astronomy

**NAS 5-29174 University of Colorado - Boulder 2174**  
Space station command control and interface technology prototyping

Period	Obligations	
08/08/85-05/08/86	FY85: \$84,364	TOTAL: \$84,364
Prin. Invest.	NASA Tech. Officer	CASE Category
Hansen, E. R.	GSFC/Prokop, E. J.	
Davis, R. L./Moe, K. L.		22-Computer Science

**NAS 8-31958 University of Colorado - Boulder 2175**  
Study of geophysical fluid dynamics with electro-hydrodynamics polarization forces

Period	Obligations	
03/26/76-11/30/85	FY85: \$178,000	TOTAL: \$855,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hart, J. E.	MSFC/Jones, C. T.	31-Atmos Sci
Toomre, J.	MSFC/Fichtl, G. H.	

**NAS 8-35668 University of Colorado - Boulder 2176**  
Particle behavior under low intergranular stresses

Period	Obligations	
11/02/83-02/28/86	FY85: \$5,000	TOTAL: \$89,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Sture, S.	MSFC/Costes, N. C.	39-Env Sci, NEC
	MSFC/Smith, G. T.	

**NAS 8-35913 University of Colorado - Boulder 2177**  
Plasma turbulence effects on auroral particle precipitation

Period	Obligations	
01/23/84-04/22/84	FY85:	TOTAL: \$9,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Dusenbery, P. B.	MSFC/Lyons, L. R.	19-Phys Sci, NEC
	MSFC/Fields, S. A.	

**NAS 8-35920 University of Colorado - Boulder 2178**  
Plasma instabilities on the plasma sheet boundary

Period	Obligations	
04/23/84-03/22/85	FY85:	TOTAL: \$29,965
Prin. Invest.	NASA Tech. Officer	CASE Category
Dusenbery, P. B.	MSFC/Lyons, L. R.	32-Geological Sci
	MSFC/Fields, S. A.	

**NASW 3711 University of Colorado - Boulder 2179**  
Low cost end to end satellite data system

Period	Obligations	
03/18/83-03/22/86	FY85: \$198,509	TOTAL: \$430,599
Prin. Invest.	NASA Tech. Officer	CASE Category
Hansen, E.	HQ-EI/Devirian, M.	22-Computer Science
Davis, R.		

**NASW 3730 University of Colorado - Boulder 2180**  
Development of an SEM operational interface to the TDRSS network

Period	Obligations	
04/30/83-12/31/84	FY85:	TOTAL: \$383,380
Prin. Invest.	NASA Tech. Officer	CASE Category
Hansen, E. L.	HQ-EE/Esenwein, G. F.	
		29-Math/Computer, NEC
	HQ-EZ/Weinreb, M. B.	

**NASW 3800 University of Colorado - Boulder 2181**  
Analysis and interpretation of data acquired by the Solar Mesosphere Explorer (SME) satellite

Period	Obligations	
12/01/83-11/30/85	FY85: \$1,376,309	TOTAL: \$2,476,309
Prin. Invest.	NASA Tech. Officer	CASE Category
Unavailable	HQ-EE/Esenwein, G.	41-Aero Engr

**NASW 4020 University of Colorado - Boulder 2182**  
Development of a Mars ozone photochemical spectrometer

Period	Obligations	
11/01/84-10/31/85	FY85: \$50,000	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Rosch, D. W.	HQ-EL/Vescelus, F.	42-Astro Engr
	HQ-EL/Quaide, W. L.	

**NASW 4024 University of Colorado - Boulder 2183**  
Development of a radio impulse detection experiment

Period	Obligations	
11/19/84-11/18/87	FY85: \$51,738	TOTAL: \$51,738
Prin. Invest.	NASA Tech. Officer	CASE Category
Warwick, J.	HQ-EL/Vescelus, F.	11-Astronomy
	HQ-EL/Quaide, W.	

**NCA 2-170202 University of Colorado - Boulder 2184**  
Design of three dimensional aerodynamic configuration using numerical optimization procedures

Period	Obligations	
06/01/82-05/31/84	FY85:	TOTAL: \$38,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Chow, C. Y.	ARC/Holst, T. L.	41-Aero Engr
	ARC/Hicks, R. M.	

**NASA'S UNIVERSITY PROGRAM**  
**COLORADO (Continued)**

<b>NCA 2-170302      University of Colorado - Boulder      2185</b>			
Development of an efficient pressure solution methodology for incompressible Navier-Stokes equation			
<i>Period</i>	<i>Obligations</i>		
06/01/83-05/31/85	FY85:	TOTAL: \$39,160	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Chow, C. Y.	ARC/Kwak, D.	41-Aero Engr	

<b>NSG 5103      University of Colorado - Boulder      2192</b>			
Rocket research in the ultraviolet airglow and aurora of planetary atmospheres			
<i>Period</i>	<i>Obligations</i>		
02/01/76-12/31/85	FY85: \$325,000	TOTAL: \$2,338,407	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Barth, C. A.	GSFC/Early, L. J.	19-Phys Sci, NEC	
Hathaway, D. D.	GSFC/Pless, R. H.		

<b>NCA 2-170303      University of Colorado - Boulder      2186</b>			
A LANDSAT land cover classification of the Sagavanirktok Quadrangle, Alaska			
<i>Period</i>	<i>Obligations</i>		
08/01/83-07/31/85	FY85: \$13,399	TOTAL: \$34,981	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Walker, D. A.	ARC/Gaydos, L.	32-Geological Sci	

<b>NSG 5153      University of Colorado - Boulder      2193</b>			
Research of observed and theoretical variations of atmospheric ozone			
<i>Period</i>	<i>Obligations</i>		
01/17/77-10/31/85	FY85: \$3,000	TOTAL: \$620,341	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
London, J.	GSFC/Frederick, J. E.	31-Atmos Sci	
Thomas, G. E.	HQ-EE/Butler, D. M.		

<b>NCA 2-170501      University of Colorado - Boulder      2187</b>			
Molecular processes in the shuttle glow			
<i>Period</i>	<i>Obligations</i>		
12/01/84-11/30/85	FY85: \$6,000	TOTAL: \$6,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Mizushima, M.	ARC/Shimazaki, T.	13-Physics	

<b>NSG 5178      University of Colorado - Boulder      2194</b>			
Rocket research in solar ultraviolet spectroscopy			
<i>Period</i>	<i>Obligations</i>		
06/01/77-11/14/85	FY85: \$217,000	TOTAL: \$1,516,432	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Rottman, G. T.	GSFC/Early, L. J.	13-Physics	
	GSFC/Pless, R. H.		

<b>NCC 2-355      University of Colorado - Boulder      2188</b>			
Numerical study of porous airfoils in transonic flow			
<i>Period</i>	<i>Obligations</i>		
06/01/85-10/31/85	FY85: \$35,039	TOTAL: \$35,039	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Chow, C. Y.	ARC/Holst, T. L.	41-Aero Engr	
Chen, C. L.	ARC/Gross, A. R.		

<b>NSG 5300      University of Colorado - Boulder      2195</b>			
Research of stellar wind velocity in Alpha Cam using ultraviolet data from the International Ultraviolet Explorer (IUE)			
<i>Period</i>	<i>Obligations</i>		
09/15/78-05/14/86	FY85: \$83,100	TOTAL: \$465,238	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Snow, T. P., Jr.	GSFC/Kondo, Y.	11-Astronomy	
Seab, C. G.			

<b>NGL 06-003-052      University of Colorado - Boulder      2189</b>			
Theoretical and experimental research program in physics of planetary atmospheres			
<i>Period</i>	<i>Obligations</i>		
06/28/66-09/30/85	FY85:	TOTAL: \$4,794,457	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Barth, C. A.	HQ-EL/Brinton, H. C.	31-Atmos Sci	
	HQ-EL/Brunk, W. E.		

<b>NSG 5303      University of Colorado - Boulder      2196</b>			
Ultraviolet measurements with high spectral resolution			
<i>Period</i>	<i>Obligations</i>		
09/15/78-01/14/86	FY85: \$288,000	TOTAL: \$1,828,791	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Snow, T. P., Jr.	GSFC/Early, L. J.	11-Astronomy	
McClintock, W. E.	GSFC/Pless, R. H.		
Cash, W. C.			

<b>NGL 06-003-057      University of Colorado - Boulder      2190</b>			
Basic research in solar physics			
<i>Period</i>	<i>Obligations</i>		
09/05/67-10/31/85	FY85: \$90,000	TOTAL: \$1,553,758	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Linsky, J. L.	HQ-EZ/Spicer, D. S.	13-Physics	

<b>NSG 7128      University of Colorado - Boulder      2197</b>			
Studies of X-ray ultraviolet and optical emission from galactic X-ray sources			
<i>Period</i>	<i>Obligations</i>		
03/01/75-09/30/85	FY85: \$91,000	TOTAL: \$525,990	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
McCray, R.	HQ-EZ/Kaluzienski, L.	11-Astronomy	
Shull, J. M.	HQ-EZ/Ormes, J. F.		

<b>NGT 06-003-800      University of Colorado - Boulder      2191</b>			
NASA graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
08/26/85-08/25/86	FY85: \$18,000	TOTAL: \$18,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Shull, J. M.	HQ-LE/Owens, F. C.	13-Physics	

<b>NSG 7287      University of Colorado - Boulder      2198</b>			
Study of the solar corona using radio observation			
<i>Period</i>	<i>Obligations</i>		
07/01/76-10/31/85	FY85: \$55,000	TOTAL: \$402,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Dulk, G. A.	HQ-EZ/Bohlin, J. D.	13-Physics	
	HQ-EZ/Spicer, D. S.		

**NASA'S UNIVERSITY PROGRAM  
COLORADO (Continued)**

**NSG 7459 University of Colorado - Boulder 2199**  
Development and test of multi-anode microchannel array detector system

Period	Obligations
06/01/78-06/30/84	FY85: TOTAL: \$1,581,949
Prin. Invest. Timothy, J. G.	NASA Tech. Officer HQ-EZ/Weiler, E. J. CASE Category 11-Astronomy
	HQ-EZ/Bogges, N. W.

**NSG 7511 University of Colorado - Boulder 2200**  
Basic research in solar physics: Energy transport in the solar envelope and atmosphere

Period	Obligations
10/01/78-09/30/85	FY85: \$90,000 TOTAL: \$438,576
Prin. Invest. Toomre, J.	NASA Tech. Officer HQ-EZ/Spicer, D. S. CASE Category 13-Physics

**NSG 7626 University of Colorado - Boulder 2201**  
High resolution spectrophotometric observations of interstellar absorption lines

Period	Obligations
08/01/79-07/31/86	FY85: \$38,749 TOTAL: \$224,911
Prin. Invest. Snow, T. P.	NASA Tech. Officer HQ-EZ/Stencel, R. E. CASE Category 11-Astronomy
	HQ-EZ/Weiler, E. J.

**NAG 2-351 University of Denver 2202**  
Infrared measurements of atmospheric constituents

Period	Obligations
06/01/85-05/31/86	FY85: \$228,049 TOTAL: \$228,049
Prin. Invest. Murcra, D. G.	NASA Tech. Officer ARC/Vedder, J. F. CASE Category 31-Atmos Sci

**NAGW 158 University of Denver 2203**  
Wave mechanism in space plasma driven by non-Maxwellian distributions

Period	Obligations
03/15/81-03/14/84	FY85: TOTAL: \$89,851
Prin. Invest. Patel, V. L.	NASA Tech. Officer HQ-EE/Lynch, J. T. CASE Category 13-Physics
	HQ-EL/Evans, N.

**NAGW 479 University of Denver 2204**  
Utilization of sage aerosol profiles in the analysis of Mauna Loa stratospheric lidar data

Period	Obligations
07/01/83-06/30/84	FY85: TOTAL: \$29,387
Prin. Invest. Murcra, D. G.	NASA Tech. Officer HQ-EE/Watson, R. T. CASE Category 31-Atmos Sci

**NAS 1-16306 University of Denver 2205**  
Science support for Earth radiation budget satellite/stratospheric aerosol and gas experiment

Period	Obligations
08/22/80-09/30/86	FY85: \$67,600 TOTAL: \$191,419
Prin. Invest. Murcra, D. G.	NASA Tech. Officer LARC/McMaster, L. R. CASE Category 31-Atmos Sci
	LARC/McCormick, M. P.

**NAS 2-11186 University of Denver 2206**  
Measurements of compounds of interest in stratospheric chemistry using infrared techniques

Period	Obligations
03/01/82-07/31/85	FY85: TOTAL: \$908,232
Prin. Invest. Murcra, D. G.	NASA Tech. Officer ARC/Margozzi, A. CASE Category 31-Atmos Sci

**NAS 5-26627 University of Denver 2207**  
Measurement of X-rays in the mesosphere

Period	Obligations
07/02/81-12/31/85	FY85: \$24,970 TOTAL: \$111,105
Prin. Invest. Barcus, J. R.	NASA Tech. Officer GSFC/Goldberg, R. A. CASE Category 11-Astronomy

**NAS 8-34604 University of Denver 2208**  
Cloud physics experiment simulation crystal growth in a cloud simulation facility

Period	Obligations
12/10/81-12/31/84	FY85: TOTAL: \$60,000
Prin. Invest. Plooster, M. N.	NASA Tech. Officer MSFC/Fogle, V. CASE Category 13-Physics
	MSFC/Williams, J. R.

**NASW 3466 University of Denver 2209**  
Transfer research impact studies support of NASA's program for transfer research impact studies

Period	Obligations
02/01/81-05/31/86	FY85: TOTAL: \$1,464,744
Prin. Invest. Chapman, R.	NASA Tech. Officer HQ-LG/Ault, L. A. CASE Category 99-Multi-Discip
	HQ-LG/Bivins, R. G.

**NCC 1-48 University of Denver 2210**  
Collaborative study of high resolution infrared atmospheric spectra

Period	Obligations
12/01/80-11/30/85	FY85: \$28,999 TOTAL: \$115,994
Prin. Invest. Goldman, A.	NASA Tech. Officer LARC/Seals, R. K., Jr. CASE Category 31-Atmos Sci
	Murcra, D. G. LARC/Rinsland, C. P.

**NSG 1432 University of Denver 2211**  
Ground based solar spectral studies

Period	Obligations
07/11/77-04/10/86	FY85: \$34,821 TOTAL: \$506,458
Prin. Invest. Murcra, D. G.	NASA Tech. Officer LARC/Seals, R. K., Jr. CASE Category 39-Env Sci, NEC
	LARC/Rinsland, C. P.

**NCC 2-41 University of Southern Colorado 2212**  
Technology research for strapdown inertial experiments

Period	Obligations
10/01/79-01/31/85	FY85: TOTAL: \$665,324
Prin. Invest. Carestia, R. A.	NASA Tech. Officer ARC/Callas, G. P. CASE Category 42-Astro Engr
	Cottrell, D. E.

# **NASA'S UNIVERSITY PROGRAM** **COLORADO (Continued)**

**NCC 2-276 University of Southern Colorado 2213**  
 Independent safety analysis of the x-wing digital control systems  

Period	Obligations
11/01/83-10/31/85	FY85: \$21,969 TOTAL: \$107,793
Prin. Invest.	NASA Tech. Officer CASE Category
Dunn, W. R.	ARC/Corliss, L. D. 41-Aero Engr
Karmarkar, J.	ARC/Burks, J. S.

**NCC 2-277 University of Southern Colorado 2214**  
 Investigation of advanced Fault tolerant integrated avionics systems  

Period	Obligations
11/01/83-10/31/85	FY85: TOTAL: \$74,405
Prin. Invest.	NASA Tech. Officer CASE Category
Dunn, W. R.	ARC/Criss, C. 41-Aero Engr
Karmarkar, J. S.	ARC/Doane, D. H.

**NCC 2-303 University of Southern Colorado 2215**  
 Investigation of advanced Fault insertion and simulator methods  

Period	Obligations
06/01/84-12/31/85	FY85: TOTAL: \$49,368
Prin. Invest.	NASA Tech. Officer CASE Category
Dunn, W. R.	ARC/Doane, D. H. 45-Elec Engr

## **CONNECTICUT**

**NAG 2-213 University of Connecticut 2216**  
 State-of-the-art in helicopter multi-cyclic control for vibration alleviation  

Period	Obligations
11/01/82-12/31/84	FY85: TOTAL: \$130,996
Prin. Invest.	NASA Tech. Officer CASE Category
Bar-shalom, Y.	ARC/Warmbrodt, W. 41-Aero Engr
	ARC/Johnson, W.

**NAG 2-286 University of Connecticut 2217**  
 Calcium and phosphate transport across biomembranes  

Period	Obligations
03/01/84-05/31/84	FY85: TOTAL: \$5,958
Prin. Invest.	NASA Tech. Officer CASE Category
Brenner, F.	ARC/Young, D. R. 51-Biological Sci

**NAG 2-318 University of Connecticut 2218**  
 Multivariable second order dual controller for helicopter multi-cyclic control of helicopter vibration  

Period	Obligations
10/01/84-10/31/85	FY85: \$40,000 TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer CASE Category
Bar-shalom, Y.	ARC/Warmbrodt, W. 41-Aero Engr
Molusis, J.	

**NAG 3-160 University of Connecticut 2219**  
 Elevated temperature biaxial fatigue  

Period	Obligations
02/15/81-10/30/84	FY85: TOTAL: \$160,382
Prin. Invest.	NASA Tech. Officer CASE Category
Jordan, E. H.	LERC/Kaufman, A. 49-Engr, NEC

**NAG 3-271 University of Connecticut 2220**  
 Development of novel aligned ferrous superalloys  

Period	Obligations
04/15/82-05/19/85	FY85: \$35,310 TOTAL: \$211,231
Prin. Invest.	NASA Tech. Officer CASE Category
Nowotny, H.	LERC/Stephens, J. R. 47-Materials Engr

**NAG 3-336 University of Connecticut 2221**  
 Evaluation of solid fluorescent particles for laser velocimetry  

Period	Obligations
11/15/82-10/31/84	FY85: TOTAL: \$55,294
Prin. Invest.	NASA Tech. Officer CASE Category
Bennett, J. C.	LERC/Strazisar, A. J. 41-Aero Engr

**NAG 3-350 University of Connecticut 2222**  
 Influence of large-scale motion on turbulence transport for confined coaxial jets  

Period	Obligations
10/30/82-02/28/85	FY85: TOTAL: \$120,000
Prin. Invest.	NASA Tech. Officer CASE Category
Bennett, J. C.	LERC/Marek, C. J. 46-Mech Engr

**NAG 3-484 University of Connecticut 2223**  
 Fluid mechanics of turbine scroll ducts  

Period	Obligations
11/01/83-01/30/86	FY85: \$58,750 TOTAL: \$98,703
Prin. Invest.	NASA Tech. Officer CASE Category
Bennett, J. C.	LERC/Roelke, R. J. 41-Aero Engr

**NAG 3-512 University of Connecticut 2224**  
 Biaxial constitutive equation development  

Period	Obligations
01/06/84-05/14/86	FY85: \$109,558 TOTAL: \$273,131
Prin. Invest.	NASA Tech. Officer CASE Category
Jordan, E.	LERC/Thompson, R. L. 41-Aero Engr

**NSG 3238 University of Connecticut 2225**  
 Turbine endwall two-cylinder program  

Period	Obligations
01/02/79-10/01/85	FY85: TOTAL: \$245,700
Prin. Invest.	NASA Tech. Officer CASE Category
Langston, L. S.	LERC/Goldman, L. J. 46-Mech Engr

**NAG 5-443 Wesleyan University 2226**  
 Ultraviolet observations of high-mass field horizontal branch A-stars  

Period	Obligations
07/15/84-07/14/85	FY85: TOTAL: \$6,500
Prin. Invest.	NASA Tech. Officer CASE Category
Philip, A. G.	GSFC/Kondo, Y. 11-Astronomy
Huenemoerder, D. P.	
Hayes, D. S.	

**NAGW 244 Wesleyan University 2227**  
 Morphology and evolution of the Valles Marineris wall scarps  

Period	Obligations
10/01/81-05/31/86	FY85: \$11,486 TOTAL: \$45,335
Prin. Invest.	NASA Tech. Officer CASE Category
Patton, P. C.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

# **NASA'S UNIVERSITY PROGRAM CONNECTICUT (Continued)**

**NAG 3-201** **Yale University** **2228**  
Theory of mass transfer from combustion gases  
*Period* *Obligations*  
09/01/81-10/31/84 FY85: TOTAL: \$160,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rosner, D. E. LERC/Kohl, F. J. 43-Chem Engr  
LERC/Benford, S. M.

**NAG 3-590** **Yale University** **2229**  
Theory of multicomponent coupled vapor and condensate flows relevant to metal surface corrosion and fouling in combustion systems  
*Period* *Obligations*  
12/05/84-12/04/85 FY85: \$65,000 TOTAL: \$65,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rosner, D. E. LERC/Santoro, G. J. 43-Chem Engr  
LERC/Stearns, C. A.

**NAG 9-93** **Yale University** **2230**  
Early differentiation of the moon: Experimental and modeling studies  
*Period* *Obligations*  
02/01/85-01/31/86 FY85: \$65,140 TOTAL: \$65,140  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Longhi, J. JSC/Browne, I. D. 47-Materials Engr

**NAGW 175** **Yale University** **2231**  
Early differentiation of the Moon: Experimental modeling studies  
*Period* *Obligations*  
02/01/81-01/31/86 FY85: TOTAL: \$221,800  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Longhi, J. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NAGW 251** **Yale University** **2232**  
Theoretical studies on prebiotic conditions  
*Period* *Obligations*  
09/15/81-09/14/85 FY85: TOTAL: \$25,801  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Morowitz, H. J. HQ-EB/Devincenzi, D. L. 12-Chemistry

**NAGW 777** **Yale University** **2233**  
Global modeling of years-to-centuries timescales solar phenomena with probable terrestrial consequences  
*Period* *Obligations*  
07/01/85-12/31/85 FY85: \$70,145 TOTAL: \$70,145  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Demarque, P. HQ-EE/Butler, D. M. 11-Astronomy  
GSFC/Birmingham, T. J.

**NAGW 778** **Yale University** **2234**  
Theoretical studies of the solar stellar connection with the aid of space vehicles  
*Period* *Obligations*  
08/01/85-07/31/86 FY85: \$70,286 TOTAL: \$70,286  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Demarque, P. HQ-EZ/Stencel, R. E. 41-Aero Engr  
HQ-EZ/Weiler, E. J.

**NAS 8-34383** **Yale University** **2235**  
Containerless high temperature property measurements by atomic fluorescence  
*Period* *Obligations*  
06/10/81-06/09/84 FY85: TOTAL: \$271,261  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Nordine, P. C. MSFC/Fallon, R. A. 19-Phys Sci, NEC  
Walker, C. A. MSFC/Ethridge, E. S.  
Schiffman, R. A.

**NAS 8-34903** **Yale University** **2236**  
Satellite data application to baroclinic wave structure  
*Period* *Obligations*  
07/29/82-07/28/86 FY85: TOTAL: \$207,873  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Saltzman, B. MSFC/Fichel, B. G. 31-Atmos Sci  
Tang, G. M. MSFC/Kaufman, J. I.

**NAS 8-36356** **Yale University** **2237**  
Application of dynamical systems theory to global weather phenomena  
*Period* *Obligations*  
09/30/85-09/29/88 FY85: \$61,032 TOTAL: \$61,032  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Saltzman, B. MSFC/Kaufman, J. W. 31-Atmos Sci  
MSFC/Fichh, G. H.

**NAS 9-17395** **Yale University** **2238**  
Disturbance isolation in flexible space structures: Modeling and control  
*Period* *Obligations*  
03/26/85-03/26/86 FY85: \$50,000 TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Narendra, K. S. JSC/Rocha, R. 45-Elec Engr

**NCC 2-324** **Yale University** **2239**  
Team performance in aeronautical and space environments  
*Period* *Obligations*  
10/01/84-10/31/85 FY85: \$94,527 TOTAL: \$94,527  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hackman, J. R. ARC/Foushee, H. C. 62-Social Aspects  
Ginnett, R. C.

**NGT 07-001-800** **Yale University** **2240**  
NASA graduate student researchers program  
*Period* *Obligations*  
08/01/85-07/31/86 FY85: \$17,340 TOTAL: \$17,340  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Demarque, P. HQ-LE/Owens, F. C. 11-Astronomy

**MSG 7290** **Yale University** **2241**  
Membranes and circadian rhythms in plants  
*Period* *Obligations*  
10/01/76-10/30/85 FY85: \$50,000 TOTAL: \$465,790  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Galston, A. W. HQ-EB/Halstead, T. W. 51-Biological Sci

# **NASA'S UNIVERSITY PROGRAM** **DELAWARE**

## **DELAWARE**

**NAG 1-281**                      **University of Delaware**                      **2242**  
Mechanically fastened joints in woven fabric composites

<i>Period</i>	<i>Obligations</i>	
06/01/82-10/31/84	FY85:	TOTAL: \$50,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pipes, R. B.	LARC/Dexter, H. B.	41-Aero Engr
	LARC/Deaton, J. W.	

**NAG 1-378**                      **University of Delaware**                      **2243**  
Influence of constituent properties and geometric form on composite properties

<i>Period</i>	<i>Obligations</i>	
06/01/83-09/30/86	FY85: \$75,039	TOTAL: \$210,899
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pipes, R. B.	ARC/Dexter, H. B.	47-Materials Engr
Chou, T. W.	ARC/Deaton, J. W.	
Wilson, D. W.		

**NAG 1-475**                      **University of Delaware**                      **2244**  
Deflamination growth in composite laminates

<i>Period</i>	<i>Obligations</i>	
06/01/84-08/31/86	FY85: \$45,000	TOTAL: \$135,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gillespie, J. W., Jr.	LARC/Whitcomb, J. D.	46-Mech Engr
	LARC/O'Brien, T. K.	

**NAG 3-422**                      **University of Delaware**                      **2245**  
Advanced concepts for high efficiency GaAs concentrator solar cells for space applications

<i>Period</i>	<i>Obligations</i>	
04/25/83-12/31/85	FY85: \$15,000	TOTAL: \$71,131
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Barnett, A. M.	LERC/Flood, D. J.	45-Elec Engr
	LERC/Curtis, H. B.	

**NAG 5-348**                      **University of Delaware**                      **2246**  
A study of carbon and silicon in selected white dwarfs

<i>Period</i>	<i>Obligations</i>	
07/15/83-08/31/85	FY85: \$6,500	TOTAL: \$20,234
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shipman, H. L.	GSFC/Kondo, Y.	11-Astronomy

**NAGW 374**                      **University of Delaware**                      **2247**  
Remote sensing investigations of wetland biomass and productivity for global biosystems research

<i>Period</i>	<i>Obligations</i>	
12/01/82-11/01/85	FY85: \$74,090	TOTAL: \$210,110
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Klenas, V.	HQ-EB/Rambler, M. B.	51-Biological Sci
	HQ-EB/Devincenzi, D. L.	

**NAS 5-26273**                      **University of Delaware**                      **2248**  
Investigation of the stability of naturally occurring glasses

<i>Period</i>	<i>Obligations</i>	
09/01/80-09/27/83	FY85:	TOTAL: \$39,291
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Glass, W. P.	GSFC/Alterscu, S.	43-Chem Engr
	GSFC/O'keefe, J. A.	

**NAS 5-27580**                      **University of Delaware**                      **2249**  
Evaluation of spatial, radiometric and spectral thematic mapper performance for coastal studies

<i>Period</i>	<i>Obligations</i>	
03/31/83-09/01/85	FY85: \$4,274	TOTAL: \$58,583
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Klemas, V.	GSFC/Oseroff, H.	39-Env Sci, NEC

**NCC 1-81**                      **University of Delaware**                      **2250**  
Spectral radiance measurements of tidal wetlands for ecological assessment by remote sensing

<i>Period</i>	<i>Obligations</i>	
09/01/83-08/31/85	FY85:	TOTAL: \$14,573
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Klemas, V.	LARC/Bartlett, D. S.	39-Env Sci, NEC
	LARC/Johnson, R. W.	

## **DISTRICT OF COLUMBIA**

**NASW 4067**                      **The American University**                      **2251**  
Force and writing a history of the space station task

<i>Period</i>	<i>Obligations</i>	
06/01/85-09/01/86	FY85: \$43,763	TOTAL: \$43,763
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McCurdy, H. E.	HQ-LB/Fries, S.	41-Aero Engr
	HQ-LB/Cohen, N. B.	

**NAG 5-296**                      **The Catholic University of America**                      **2252**  
The sharp lined features in the ultraviolet spectra of hot white dwarfs

<i>Period</i>	<i>Obligations</i>	
02/15/83-09/14/86	FY85: \$83,610	TOTAL: \$164,607
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bruhweiler, F. C.	GSFC/Kondo, Y.	11-Astronomy

**NAG 5-311**                      **The Catholic University of America**                      **2253**  
Query decomposition of multiple queries

<i>Period</i>	<i>Obligations</i>	
04/15/83-04/30/86	FY85: \$30,707	TOTAL: \$93,058
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Welch, J. N.	GSFC/Jacobs, B.	22-Computer Science
	GSFC/Berbert, J. H.	

**NAG 5-520**                      **The Catholic University of America**                      **2254**  
Research relative to active control of flexible spacecraft structures

<i>Period</i>	<i>Obligations</i>	
03/15/85-03/14/86	FY85: \$24,900	TOTAL: \$24,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Baz, A. M.	GSFC/Osborne, E. P.	46-Mech Engr
	GSFC/Studer, P. A.	

**NAG 5-596**                      **The Catholic University of America**                      **2255**  
An investigation of the largescale structure of the galactic interstellar medium

<i>Period</i>	<i>Obligations</i>	
08/01/85-07/31/86	FY85: \$16,982	TOTAL: \$16,982
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bruhweiler, F. C.	GSFC/Hallam, K. L.	11-Astronomy



**NASA'S UNIVERSITY PROGRAM  
DISTRICT OF COLUMBIA (Continued)**

**NAGW 579 The Catholic University of America 2256**  
Dynamical structures of the solar wind

<i>Period</i>	<i>Obligations</i>	
03/15/84-02/28/86	FY85: \$55,000	TOTAL: \$110,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Whang, Y. C.	HQ-EZ/Spicer, D. S.	13-Physics

**NAGW 738 The Catholic University of America 2257**  
Interplanetary structures and MHD shocks

<i>Period</i>	<i>Obligations</i>	
04/01/85-11/30/85	FY85: \$30,000	TOTAL: \$30,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Whang, Y. C.	HQ-EE/Lynch, J. T.	13-Physics
	HQ-EE/Shawhan, S. D.	

**NAS 5-28586 The Catholic University of America 2258**  
Teaching of artificial microtektites in marine environments

<i>Period</i>	<i>Obligations</i>	
09/26/84-11/26/85	FY85:	TOTAL: \$25,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Barkatt, A. A.	GSFC/Alterescu, S.	47-Materials Engr
	GSFC/O'keefe, J. A.	

**NSG 5066 The Catholic University of America 2259**  
Research of solar hard X-rays and gamma-rays

<i>Period</i>	<i>Obligations</i>	
05/01/75-08/14/86	FY85: \$130,941	TOTAL: \$469,555
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wertz, C. W.	GSFC/Trombka, J. I.	11-Astronomy
	GSFC/Schmadebeck, R. L.	

**NSG 5173 The Catholic University of America 2260**  
Atom-molecule reactions of chemical importance in the stratosphere

<i>Period</i>	<i>Obligations</i>	
06/01/77-03/31/86	FY85: \$35,040	TOTAL: \$287,618
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sanders, W. A.	GSFC/Nava, D. F.	12-Chemistry
Michael, J. V.		

**NAG 1-136 George Washington University 2261**  
Program of research in high-speed aerodynamics in the Joint Institute for Advancement of Flight Sciences

<i>Period</i>	<i>Obligations</i>	
12/09/80-11/30/85	FY85: \$51,680	TOTAL: \$210,736
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Liebowitz, H.	LARC/Beach, H. L.	41-Aero Engr

**NAG 1-158 George Washington University 2262**  
Effects of low velocity impact on strength characteristics of composite materials laminates

<i>Period</i>	<i>Obligations</i>	
03/01/81-10/31/85	FY85: \$86,727	TOTAL: \$300,455
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Liebowitz, H.	LARC/Elber, W.	47-Materials Engr
Moyer, E. T., Jr.	LARC/Bostaph, G. M.	

**NAG 1-179 George Washington University 2263**  
Software reliability models for fault-tolerant avionics computers and related topics

<i>Period</i>	<i>Obligations</i>	
07/01/81-05/31/86	FY85: \$78,552	TOTAL: \$338,247
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Miller, D. R.	LARC/Migneault, G. E.	22-Computer Science
	LARC/Finelli, G. B.	

**NAG 1-185 George Washington University 2264**  
Raster graphics extension to the CORE system

<i>Period</i>	<i>Obligations</i>	
05/01/81-11/15/84	FY85:	TOTAL: \$121,291
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Foley, J. D.	LARC/Lansing, D. L.	22-Computer Science
	LARC/Shoosmith, J. N.	

**NAG 1-199 George Washington University 2265**  
Research program in active control/aeroelasticity

<i>Period</i>	<i>Obligations</i>	
08/01/81-10/31/85	FY85: \$65,898	TOTAL: \$232,069
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Liebowitz, H.	LARC/Newsom, J. R.	41-Aero Engr

**NAG 1-325 George Washington University 2266**  
Suppression of Marangoni convection in float zones

<i>Period</i>	<i>Obligations</i>	
01/19/83-01/18/86	FY85: \$78,813	TOTAL: \$221,312
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dressler, R. F.	LARC/Crouch, R. K.	19-Phys Sci, NEC
Yevjevich, V.	LARC/Fripp, A. L.	

**NAG 1-538 George Washington University 2267**  
Graphics programming languages

<i>Period</i>	<i>Obligations</i>	
11/16/84-01/31/86	FY85: \$49,974	TOTAL: \$49,974
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Foley, J. D.	LARC/Lansing, D. L.	22-Computer Science

**NAG 1-573 George Washington University 2268**  
Solution of separated flows using a simultaneous interaction technique

<i>Period</i>	<i>Obligations</i>	
04/15/85-10/31/85	FY85: \$29,864	TOTAL: \$29,864
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Liebowitz, H.	LARC/Swanson, R. C.	41-Aero Engr

**NAG 3-641 George Washington University 2269**  
Research on flow induction by rotary jets

<i>Period</i>	<i>Obligations</i>	
06/15/85-10/15/85	FY85: \$24,971	TOTAL: \$24,971
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Garris, C. A.	LERC/Gertsma, L. W.	41-Aero Engr
Foa, J. V.		

# **NASA'S UNIVERSITY PROGRAM** **DISTRICT OF COLUMBIA (Continued)**

## **NAG 3-642 George Washington University 2270** Whisher growth under conditions which resemble those available on an orbiting space laboratory

Period	Obligations	
06/10/85-06/09/86	FY85: \$46,108	TOTAL: \$46,108
Prin. Invest.	NASA Tech. Officer	CASE Category
Hobbs, H. H.	LERC/Westfall, L. J.	47-Materials Engr

## **NAG 5-265 George Washington University 2271** Discrete random media techniques for microwave modeling of vegetated terrain

Period	Obligations	
08/15/82-02/28/86	FY85: \$36,500	TOTAL: \$169,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Lang, R. H.	GSFC/Choudhury, B.	55-Agriculture Sci

## **NAGW 720 George Washington University 2272** New deterministic forecasting method for density currents and winds over mountainous terrain

Period	Obligations	
01/01/85-12/31/85	FY85: \$88,829	TOTAL: \$88,829
Prin. Invest.	NASA Tech. Officer	CASE Category
Dressler, R. F.	HQ-EE/Curran, R. J.	31-Atmos Sci
	HQ-EE/Theon, J. S.	

## **NAS 1-14605 George Washington University 2273** Experimental and analytical engineering and applied science support of Langley Research Center programs

Period	Obligations	
09/02/76-09/01/87	FY85: \$81,869	TOTAL: \$492,803
Prin. Invest.	NASA Tech. Officer	CASE Category
Liebowitz, H.	LARC/Duberg, J. E.	41-Aero Engr
Whitesides, J. L.	LARC/Erickson, W. D.	

## **NAS 5-27585 George Washington University 2274** Human factors analysis and modeling of man/ system interfaces and interactions and applied human factors analysis

Period	Obligations	
02/25/83-03/24/86	FY85: \$132,586	TOTAL: \$380,747
Prin. Invest.	NASA Tech. Officer	CASE Category
Sibert, J. L.	GSFC/Truskowski, W. F.	22-Computer Science

## **NAS 5-28169 George Washington University 2275** Mission operations division local area network (MODLAN) model

Period	Obligations	
06/01/84-01/31/85	FY85:	TOTAL: \$54,016
Prin. Invest.	NASA Tech. Officer	CASE Category
Lee, T. N.	GSFC/Wadding, S. V.	45-Elec Engr

## **NASW 3165 George Washington University 2276** Scientific communication in planetary biology and bioscience

Period	Obligations	
04/17/78-03/15/86	FY85: \$260,000	TOTAL: \$1,429,957
Prin. Invest.	NASA Tech. Officer	CASE Category
Waters, E., Jr.	HQ-EB/Halstead, T. W.	59-Life Sci, NEC
	HQ-EB/Soffen, G. A.	

## **NCC 1-14 George Washington University 2277** Aeroacoustics research program in Joint Institute for Advancement of Flight Sciences (JIAFS)

Period	Obligations	
05/15/79-10/31/85	FY85: \$103,490	TOTAL: \$718,650
Prin. Invest.	NASA Tech. Officer	CASE Category
Liebowitz, H.	LARC/Morgan, H. G.	41-Aero Engr
Myers, M. K.	LARC/Lansing, D. L.	

## **NCC 1-19 George Washington University 2278** A research program in atmospheric science

Period	Obligations	
07/01/79-07/31/84	FY85:	TOTAL: \$216,902
Prin. Invest.	NASA Tech. Officer	CASE Category
Liebowitz, H.	LARC/Sullivan, E. M.	31-Atmos Sci
Kurzeja, R. J.	LARC/Russell, J. M., III	

## **NCC 1-24 George Washington University 2279** Programs of research in flight sciences

Period	Obligations	
08/15/79-01/31/86	FY85: \$123,953	TOTAL: \$748,253
Prin. Invest.	NASA Tech. Officer	CASE Category
Liebowitz, H.	LARC/Foughner, J. T., Jr.	41-Aero Engr
Whitesides, J. L.		

## **NCC 1-29 George Washington University 2280** Research program in flight dynamics in the Joint Institute for Advancement of Flight Sciences (JIAFS) at the NASA Langley Research Center

Period	Obligations	
12/01/79-11/30/85	FY85: \$93,322	TOTAL: \$506,778
Prin. Invest.	NASA Tech. Officer	CASE Category
Liebowitz, H.	LARC/Suit, W. T.	41-Aero Engr
	LARC/Batterson, J. G.	

## **NCC 1-36 George Washington University 2281** Research program in materials science

Period	Obligations	
06/01/80-06/30/84	FY85:	TOTAL: \$498,172
Prin. Invest.	NASA Tech. Officer	CASE Category
Liebowitz, H.	LARC/Swann, R. T.	47-Materials Engr
Esterling, D. M.		

## **NCC 1-44 George Washington University 2282** Research program in aeronautics

Period	Obligations	
08/01/80-05/31/85	FY85:	TOTAL: \$255,212
Prin. Invest.	NASA Tech. Officer	CASE Category
Shinar, J.	LARC/Massenberg, S. E.	41-Aero Engr
Whitesides, J. L.	LARC/Prior, E. J.	

## **NCC 1-47 George Washington University 2283** A core program in the Joint Institute for Advancement of Flight Sciences at the NASA Langley Research Center

Period	Obligations	
11/04/80-11/03/85	FY85: \$259,998	TOTAL: \$1,175,571
Prin. Invest.	NASA Tech. Officer	CASE Category
Liebowitz, H.	LARC/Massenberg, S. E.	41-Aero Engr
Whitesides, J. L.	LARC/South, J. C.	

**NASA'S UNIVERSITY PROGRAM  
DISTRICT OF COLUMBIA (Continued)**

**NCC 1-85 George Washington University 2284**  
Pre-shuttle lidar system research  
*Period Obligations*  
04/01/84-01/31/86 FY85: \$135,092 TOTAL: \$237,837  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Lang, R. A. LARC/Wells, J. G. 49-Engr, NEC  
Allen, R. J. LARC/Browell, E. V.

**NGR 09-010-078 George Washington University 2285**  
Research programs in structures and dynamics  
*Period Obligations*  
01/06/72-12/31/85 FY85: \$296,680 TOTAL: \$2,630,021  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Liebowitz, H. LARC/McComb, H. G. 41-Aero Engr  
LARC/Card, M. F.

**NGR 09-010-085 George Washington University 2286**  
Aircraft noise reduction research  
*Period Obligations*  
02/21/73-06/30/86 FY85: TOTAL: \$690,128  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Liebowitz, H. LARC/Morgan, H. G. 41-Aero Engr

**NGT 09-010-800 George Washington University 2287**  
NASA graduate student researchers program  
*Period Obligations*  
05/03/81-05/02/84 FY85: TOTAL: \$34,325  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Silverman, B. G. HQ-LB/Owens, F. C. 49-Engr, NEC

**NSG 1555 George Washington University 2288**  
Studies of radiative transfer in the Earth's atmosphere with emphasis on the inference of the radiation budget  
*Period Obligations*  
08/01/78-10/31/86 FY85: TOTAL: \$64,931  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Liebowitz, H. LARC/Smith, G. L. 31-Atmos Sci  
Barkstrom, B. R. LARC/Suttles, J. T.

**NSG 5109 George Washington University 2289**  
Decoding and performance of error correcting codes  
*Period Obligations*  
07/16/76-10/31/86 FY85: \$58,984 TOTAL: \$414,647  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Helgert, H. J. GSFC/Morakis, J. C. 49-Engr, NEC  
GSFC/Miller, W. H.

**NASW 4063 Georgetown University 2290**  
Analysis of aeronautical vehicle technology impact on Caribbean basin development  
*Period Obligations*  
04/01/85-03/31/86 FY85: \$49,974 TOTAL: \$49,974  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Unavailable HQ-RT/Winblade, R. L. 72-Economics  
HQ-RT/Ward, J.

**NGT 09-009-800 Georgetown University 2291**  
Science technology and diplomacy training program  
*Period Obligations*  
01/01/84-12/31/87 FY85: TOTAL: \$75,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Krogh, P. F. HQ-LI/Morrison, J. 49-Engr, NEC

**NAG 1-290 Howard University 2292**  
Megamechanics research consortium  
*Period Obligations*  
07/12/82-09/30/83 FY85: TOTAL: \$144,040  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Broome, T. H., Jr. LARC/Housner, J. M. 49-Engr, NEC

**NAG 1-383 Howard University 2293**  
Large space structures institute  
*Period Obligations*  
07/11/83-08/09/86 FY85: \$950,000 TOTAL: \$1,487,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Broome, T. H., Jr. LARC/Housner, J. M. 46-Mech Engr  
Bainum, P. M. LARC/Juang, J.  
Reiss, R. 22-Computer Science

**NAG 1-478 Howard University 2294**  
An experiment in the development of Fault tolerant applications software  
*Period Obligations*  
05/01/84-08/31/85 FY85: TOTAL: \$124,132  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Coleman, D. M. LARC/Brunelle, J. E.  
LARC/Eckhardt, D. E. 22-Computer Science

**NAG 2-78 Howard University 2295**  
Far infrared observations of extragalactic molecular clouds  
*Period Obligations*  
10/01/80-09/30/84 FY85: TOTAL: \$17,663  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Richard, L. J. ARC/Haughney, L. C. 11-Astronomy

**NAG 2-250 Howard University 2296**  
Neurohumoral and mechanical factors in the modulation of left ventricular mass  
*Period Obligations*  
09/23/83-10/31/85 FY85: \$133,985 TOTAL: \$257,638  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hawthorne, E. W. ARC/Sandler, H. 59-Life Sci, NEC

**NAG 3-431 Howard University 2297**  
Development of epitaxial cubic silicon carbide  
*Period Obligations*  
05/25/83-10/23/85 FY85: TOTAL: \$514,017  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Spencer, M. G. LERC/Powell, J. A. 13-Physics  
Harris, G. L.

# **NASA'S UNIVERSITY PROGRAM** **DISTRICT OF COLUMBIA (Continued)**

**NAG 5-79** **Howard University** **2298**  
 Research relative to optical constants and properties of material  
 in the extreme ultraviolet  
*Period* *Obligations*  
 06/15/80-06/30/86 FY85: \$100,000 TOTAL: \$325,060  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Metz, R. N. GSFC/Osantowski, J. F. 13-Physics  
 GSFC/Mangus, J. D.

**NAGW 785** **Howard University** **2305**  
 Photochemistry of acetylenes laboratory studies related to the  
 photochemistry in litam's atmosphere  
*Period* *Obligations*  
 08/01/85-07/31/86 FY85: \$48,070 TOTAL: \$48,070  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Okabe, H. HQ-EL/Brinton, H. C. 31-Atmos Sci  
 HQ-EL/Quaide, W. L.

**NAG 5-156** **Howard University** **2299**  
 Real-type observations of X-ray diffraction patterns  
*Period* *Obligations*  
 07/01/81-08/31/86 FY85: \$10,000 TOTAL: \$63,625  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Tsang, T. GSFC/Yin, L. I. 13-Physics  
 Chung, D. Y.

**NCA 5-29** **Howard University** **2306**  
 Goddard introduction to engineering careers  
*Period* *Obligations*  
 06/01/78-07/20/86 FY85: \$9,200 TOTAL: \$69,710  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Cox, E. L. GSFC/Mundy, J. R. 49-Engr, NEC  
 GSFC/Chapman, J. W.

**NAG 5-224** **Howard University** **2300**  
 Snow cover snowmelt and runoff in the Himalogan River basins  
*Period* *Obligations*  
 03/15/82-11/14/86 FY85: TOTAL: \$235,884  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Day, B. GSFC/Hall, D. K. 39-Env Sci, NEC  
 Goswami, D. GSFC/Foster, J. L.

**NCA 5-101** **Howard University** **2307**  
 Teacher engineering orientation program  
*Period* *Obligations*  
 07/09/84-07/20/86 FY85: \$20,000 TOTAL: \$20,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Cox, E. L. GSFC/Chapman, J. W. 49-Engr, NEC  
 Peace, L. V. GSFC/Mundy, J. R.

**NAG 5-246** **Howard University** **2301**  
 Communications and gigabet logic systems at millimeter wave  
 frequencies  
*Period* *Obligations*  
 08/15/82-02/14/86 FY85: \$331,855 TOTAL: \$934,330  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Spencer, M. G. GSFC/Alcorn, G. E. 44-Civil Engr  
 Harris, G.

**NCC 5-25** **Howard University** **2308**  
 A simulation network for electrical engineering  
*Period* *Obligations*  
 10/01/82-12/31/85 FY85: TOTAL: \$420,300  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Deloatch, E. M. GSFC/Truszkowski, W. F. 45-Elec Engr  
 Bradley, T.  
 Neal, W.

**NAG 5-390** **Howard University** **2302**  
 Research relative to a class of optically controlled millimeter  
 wave devices  
*Period* *Obligations*  
 02/01/84-05/31/86 FY85: \$86,949 TOTAL: \$136,873  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Chiang, B. GSFC/Alcorn, G. E. 42-Astro Engr

**NGT 09-011-060** **Howard University** **2309**  
 NASA graduate student researchers program  
*Period* *Obligations*  
 01/01/78-02/28/86 FY85: TOTAL: \$853,748  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Fan, D. N. HQ-LB/Owens, F. C. 99-Multi-Discip

**NAGW 446** **Howard University** **2303**  
 An integrated laboratory and observational study of the inner  
 cona of Halley's comet  
*Period* *Obligations*  
 06/01/83-05/31/86 FY85: \$113,434 TOTAL: \$430,338  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Jackson, W. M. HQ-EL/Brinton, H. C. 31-Atmos Sci  
 HQ-EL/Quaide, W. L.

**NGT 09-011-802** **Howard University** **2310**  
 NASA graduate student researchers program  
*Period* *Obligations*  
 05/01/84-04/31/85 FY85: TOTAL: \$10,832  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bradley, T. J. HQ-LB/Owens, F. C. 45-Elec Engr

**NAGW 545** **Howard University** **2304**  
 Agreement between Howard university and NASA Goddard for  
 astronomical research  
*Period* *Obligations*  
 02/01/84-01/31/86 FY85: \$177,622 TOTAL: \$362,442  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Peery, B. F. HQ-EZ/Stencel, R. E. 11-Astronomy  
 Kumar, C. K. HQ-EZ/Weiler, E. J.  
 Rickard, L. J.

**NGT 09-011-803** **Howard University** **2311**  
 NASA graduate student researchers program  
*Period* *Obligations*  
 05/01/84-04/31/85 FY85: TOTAL: \$10,200  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Harris, G. HQ-LB/Owens, F. C. 45-Elec Engr

**NGT 09-011-804** **Howard University** **2312**  
 NASA graduate student researchers program  
*Period* *Obligations*  
 05/01/85-08/14/86 FY85: \$12,000 TOTAL: \$12,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Dey, B. HQ-LE/Owens, F. C. 32-Geological Sci

# **NASA'S UNIVERSITY PROGRAM** **DISTRICT OF COLUMBIA (Continued)**

**NSG 1414** **Howard University** **2313**  
The dynamics and control of large flexible space structures  
*Period* *Obligations*  
05/16/77-02/15/86 FY85: \$54,927 TOTAL: \$545,427  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bainum, P. M. LARC/Hamer, H. A. 49-Engr, NEC  
Kumar, V. K.  
Reddy, A. S.

**NSG 5071** **Howard University** **2314**  
Laser induced photoluminescence studies of primary photochemical production processes of cometary radicals  
*Period* *Obligations*  
08/01/75-03/31/86 FY85: \$55,000 TOTAL: \$601,625  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Jackson, W. M. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NGR 09-053-003** **University of District of Columbia** **2315**  
Investigation of problems associated with solid encapsulation of high voltage electronic assemblies  
*Period* *Obligations*  
04/15/74-08/31/84 FY85: TOTAL: \$278,229  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lessin, I. GSFC/Ruitberg, A. 39-Env Sci, NEC

**NGT 05-050-902** **University of District of Columbia** **2316**  
A Saturday academy: Engineering, mathematics and computer science for academically talented students from the metropolitan Washington area  
*Period* *Obligations*  
01/28/84-01/15/86 FY85: \$111,638 TOTAL: \$303,478  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Coleman, W. R. HQ-U/Coleman, A. M.  
HQ-U/Pohly, J. 22-Computer Science

## **FLORIDA**

**NCC 1-66** **Embry-Riddle Aeronautical University** **2317**  
Advanced aircraft-air traffic control (ATC) interaction (AAAI)  
*Period* *Obligations*  
03/01/82-02/28/86 FY85: \$46,960 TOTAL: \$185,653  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lohr, G. W. LARC/Bergeron, H. P. 41-Aero Engr  
LARC/Kelly, J. R.

**NAG 2-81** **Florida A&M University** **2318**  
Relationship of angiotensin rhythms in plasma and CNS to neurogenic hypertension  
*Period* *Obligations*  
01/01/81-09/30/85 FY85: \$86,553 TOTAL: \$230,710  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Walker, C. A. ARC/Winget, C. M. 51-Biological Sci  
Winget, C. A. ARC/Deroshia, C. W.

**NAG10-9** **Florida A&M University** **2319**  
The degradation of hydrazine monomethylhydrazine and unsymmetrical dimethylhydrazine by microorganisms  
*Period* *Obligations*  
12/01/83-12/01/84 FY85: TOTAL: \$78,964  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lewis, B. A. KSC/Knott, W. M. 56-Medical Sciences

**NAS 5-25165** **Florida A&M University** **2320**  
Medical application for computer technology  
*Period* *Obligations*  
08/15/78-12/17/85 FY85: TOTAL: \$97,317  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fresh, F. A. GSFC/Alterescu, S. 46-Mech Engr

**NAS 9-17076** **Florida A&M University** **2321**  
A study entitled influence of biological clock on effects of diazepam in humans  
*Period* *Obligations*  
12/01/83-12/01/85 FY85: TOTAL: \$69,980  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Johnson, A. M. JSC/Citron-trevino, N. 51-Biological Sci

**NAS10-11066** **Florida A&M University** **2322**  
Space life sciences training program  
*Period* *Obligations*  
07/01/84-08/31/85 FY85: \$136,122 TOTAL: \$202,677  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Early, J. KSC/Long, I. 59-Life Sci, NEC  
Walker, C.

**NSG 2029** **Florida A&M University** **2323**  
Study of influence of amines on diurnal toxicity of stimulants and depressants  
*Period* *Obligations*  
07/01/74-12/31/85 FY85: \$123,723 TOTAL: \$721,369  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Walker, C. A. ARC/Winget, C. M. 59-Life Sci, NEC  
ARC/Deroshia, C. W.

**NSG 2183** **Florida A&M University** **2324**  
Regulation of the adrenal cortex function during stress  
*Period* *Obligations*  
09/01/76-12/31/85 FY85: \$82,322 TOTAL: \$438,442  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Soliman, K. F. ARC/Winget, C. M. 59-Life Sci, NEC

**NSG 5307** **Florida A&M University** **2325**  
Electron-impact excitation of molecular nitrogen  
*Period* *Obligations*  
11/15/78-12/31/84 FY85: TOTAL: \$272,924  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Jones, H. N. GSFC/Temkin, A. 13-Physics  
Weatherford, C. A.

**NASA'S UNIVERSITY PROGRAM  
FLORIDA (Continued)**

**NCC 2-361 Florida Atlantic University 2326**  
Toward comparing experiment and theory for corrobative research on hingeless rotor stability in fow

Period	Obligations	
08/01/85-07/31/86	FY85: \$22,615	TOTAL: \$22,615
Prin. Invest.	NASA Tech. Officer	CASE Category
Gaonkar, G. H.	ARC/Bousman, W. G.	41-Aero Engr
Nagabhushanam, J.	ARC/McNulty, M. J.	

**NAS10-10980 Florida Institute of Technology 2327**  
Thermal storage device for load levering of a two-phase thermal transport system

Period	Obligations	
05/04/84-05/04/85	FY85:	TOTAL: \$36,901
Prin. Invest.	NASA Tech. Officer	CASE Category
Bauman, T. E.	KSC/Lin, F. N.	46-Mech Engr

**NAG 1-421 Florida State University 2328**  
Computation of large turbulence structures and noise of supersonic jets

Period	Obligations	
12/15/83-12/31/85	FY85: \$57,000	TOTAL: \$106,962
Prin. Invest.	NASA Tech. Officer	CASE Category
Tam, C. K.	LARC/Seiner, J. M.	41-Aero Engr
	LARC/Hardin, J. C.	

**NAG 1-588 Florida State University 2329**  
Gaseous and particulate sulfur species and organic acids over the amazon basin

Period	Obligations	
06/01/85-05/31/86	FY85: \$15,466	TOTAL: \$15,466
Prin. Invest.	NASA Tech. Officer	CASE Category
Andreae, M. O.	LARC/Cofer, W. R.	31-Atmos Sci

**NAG 2-149 Florida State University 2330**  
Biochemical analysis of the anaerobic microbial metabolism and community structure in managed fermentation

Period	Obligations	
01/01/82-03/31/85	FY85:	TOTAL: \$198,000
Prin. Invest.	NASA Tech. Officer	CASE Category
White, R. C.	ARC/MacElroy, R. D.	51-Biological Sci

**NAG 2-300 Florida State University 2331**  
A study on the upstream influence of a jet in a cross flow

Period	Obligations	
08/01/84-10/31/85	FY85:	TOTAL: \$37,352
Prin. Invest.	NASA Tech. Officer	CASE Category
Krothapalli, A.	ARC/Koenig, D. G.	41-Aero Engr
	ARC/Aoyagi, K.	

**NAG 2-314 Florida State University 2332**  
The development of laser speckle velocimetry for the study of vortical flaws

Period	Obligations	
10/01/84-10/31/85	FY85: \$48,634	TOTAL: \$48,634
Prin. Invest.	NASA Tech. Officer	CASE Category
Krothapalli, A.	ARC/Smith, C. A.	41-Aero Engr
Lourenco, L. M.	ARC/Signor, D. B.	
Dommelen, L. V.		

**NAG 2-340 Florida State University 2333**  
Microgravity effect on cytoskeletal organization during fertilization and early development and on embryonic skeletal calcium deposition

Period	Obligations	
04/01/85-03/31/86	FY85: \$40,000	TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Schatten, G.	ARC/Souza, K.	51-Biological Sci
Schatten, H.		

**NAG 3-182 Florida State University 2334**  
Shock associated noise of supersonic jets from convergent-divergent nozzles

Period	Obligations	
08/01/81-12/31/84	FY85:	TOTAL: \$100,620
Prin. Invest.	NASA Tech. Officer	CASE Category
Tam, C. K.	LERC/Stone, J. R.	41-Aero Engr

**NAG 5-219 Florida State University 2335**  
Coupled ice-ocean dynamics in the marginal ice zone

Period	Obligations	
04/01/82-05/31/85	FY85:	TOTAL: \$398,984
Prin. Invest.	NASA Tech. Officer	CASE Category
O'brien, J.	GSFC/Christensen, E. M.	33-Oceanography

**NAG 5-332 Florida State University 2336**  
An investigation of the marine boundary layer during cold air outbreak

Period	Obligations	
06/15/83-12/14/85	FY85: \$19,276	TOTAL: \$97,092
Prin. Invest.	NASA Tech. Officer	CASE Category
Stage, S. A.	GSFC/Chou, S. H.	31-Atmos Sci

**NAG 8-33 Florida State University 2337**  
Analysis and use of vas satellite data

Period	Obligations	
08/23/85-08/22/87	FY85: \$155,796	TOTAL: \$155,796
Prin. Invest.	NASA Tech. Officer	CASE Category
Fuelberg, H. E.	MSFC/Greene, W. M.	31-Atmos Sci
	MSFC/Smith, G. T.	

**NCA 2-235401 Florida State University 2338**  
Leaf chemistry analysis using Fourier transform infrared FT-IR spectroscopy

Period	Obligations	
06/15/84-06/30/85	FY85:	TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer	CASE Category
White, D.	ARC/Peterson, D.	51-Biological Sci
Osterkamp, T. E.	ARC/Matson, P. A.	

**NGT 10-004-800 Florida State University 2339**  
Graduate student training program in oceanographic remote sensing

Period	Obligations	
06/01/81-05/31/86	FY85: \$95,655	TOTAL: \$447,555
Prin. Invest.	NASA Tech. Officer	CASE Category
O'brien, J. J.	HQ-EE/Thomas, R. H.	33-Oceanography
MacH, W. H.	HQ-EE/Wilson, W. S.	

**NASA'S UNIVERSITY PROGRAM  
FLORIDA (Continued)**

**NSG 7337 Florida State University 2340**  
Rock-inhabiting microorganisms from hot and cold deserts:  
Adaptations to extreme environments  
*Period Obligations*  
03/15/77-10/15/85 FY85: \$57,600 TOTAL: \$751,608  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Friedmann, E. I. HQ-EB/Devincenzi, D. L.  
Friedmann, R. O. HQ-EB/Kambler, M. B. 51-Biological Sci

**NSG 7473 Florida State University 2341**  
Laboratory determination of infrared absorption line parameters  
for molecules of importance in upper atmospheric research  
*Period Obligations*  
07/01/78-06/30/86 FY85: \$39,990 TOTAL: \$293,396  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hunt, R. H. HQ-EE/Smith, M. A. 31-Atmos Sci  
HQ-EE/Demore, W. B.

**NAS 5-26714 Nova University 2342**  
Administrative support for satellite surface stress working group  
*Period Obligations*  
09/18/81-08/31/84 FY85: TOTAL: \$179,240  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Witte, J. M. GSFC/Kirk, R. G. 33-Oceanography

**NAS 5-28567 Nova University 2343**  
Administrative support for ocean color science working group  
*Period Obligations*  
09/01/84-08/31/85 FY85: TOTAL: \$25,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Witte, J. M. GSFC/Kirk, R. G. 33-Oceanography

**NAG 1-518 The University of Central Florida 2344**  
A study of the effects of craterine on the roughness of a lifting  
surface  
*Period Obligations*  
08/24/84-12/31/85 FY85: \$35,128 TOTAL: \$69,255  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Anderson, L. A. LARC/Dunham, R. E. 41-Aero Engr

**NAG 1-615 The University of Central Florida 2345**  
Large reflector antenna study  
*Period Obligations*  
08/23/85-05/31/86 FY85: \$39,612 TOTAL: \$39,612  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Christodoulou, C. G. LARC/Bailey, M. C. 45-Elec Engr  
LARC/Beck, F. B.

**NAG 3-588 The University of Central Florida 2346**  
Polymer conductivity  
*Period Obligations*  
11/10/84-11/09/85 FY85: \$9,702 TOTAL: \$9,702  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Meyers, J. LERC/Flood, D. J. 13-Physics

**NAG10-11 The University of Central Florida 2347**  
An investigation of alternate power source applications  
*Period Obligations*  
05/17/84-11/17/84 FY85: TOTAL: \$13,947  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Anderson, L. A. KSC/Fedor, O. H. 46-Mech Engr

**NAG10-13 The University of Central Florida 2348**  
A user friendly simulation model for analyzing space station  
mission processing requirement  
*Period Obligations*  
09/11/84-01/11/85 FY85: \$7,500 TOTAL: \$27,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Linton, D. G. KSC/Tilley, R. 31-Atmos Sci

**NAG10-15 The University of Central Florida 2349**  
Personnel reliability analysis technique for space operations  
*Period Obligations*  
10/22/84-02/22/85 FY85: \$33,997 TOTAL: \$33,997  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Smith, L. L. KSC/Davis, T. C. 49-Engr, NEC

**NAS10-10390 The University of Central Florida 2350**  
Characterization and evaluation of acid rain at a site remote  
from KSC  
*Period Obligations*  
04/15/82-04/14/85 FY85: TOTAL: \$6,018  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Madsen, B. C. KSC/Knott, W. M. 39-Env Sci, NEC

**NAS10-10686 The University of Central Florida 2351**  
Feasibility analysis of high efficiency dehumidifier air conditioner  
utilizing heat pipes  
*Period Obligations*  
05/19/83-12/19/83 FY85: TOTAL: \$39,869  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Khattar, M. K. KSC/Koning, R. 46-Mech Engr  
KSC/Boggs, W. H.

**NAS10-11117 The University of Central Florida 2352**  
Mathematical model for estimating transient/ pressure surges  
in a cryogenic liquid vapor system  
*Period Obligations*  
06/06/84-06/06/85 FY85: TOTAL: \$42,766  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hosler, R. KSC/Lin, F. N. 29-Math/Computer, NEC  
Gunnerson, F.

**NAS10-11174 The University of Central Florida 2353**  
Study heat pipe applications for increased dehumidification and  
air conditioning systems  
*Period Obligations*  
04/08/85-07/08/86 FY85: \$48,862 TOTAL: \$48,862  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Khattar, M. K. KSC/Boggs, W. 31-Atmos Sci

**NASA'S UNIVERSITY PROGRAM  
FLORIDA (Continued)**

**NAG 1-135 University of Florida 2354**  
Research on solar-pumped liquid lasers  
*Period Obligations*  
01/01/81-01/31/85 FY85: TOTAL: \$318,214  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Schneider, R. T. LARC/Deyoung, R. J. 13-Physics  
Karzweg, U. H. LARC/Conway, E. J.  
Cox, J. D.

**NAG 1-368 University of Florida 2355**  
Studies in high-angle-of-attack aerodynamics  
*Period Obligations*  
05/06/83-12/31/85 FY85: TOTAL: \$55,150  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Fearn, R. L. LARC/Margason, R. J. 41-Aero Engr  
LARC/Kjelgarrrd, S. O.

**NAG 1-579 University of Florida 2356**  
Optimal airframe synthesis for stochastic loads  
*Period Obligations*  
05/01/85-08/15/85 FY85: \$11,909 TOTAL: \$11,909  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hajela, P. LARC/Perry, B. 41-Aero Engr  
LARC/Murrow, H. N.

**NAG 1-609 University of Florida 2357**  
Investigation of temperature and concentration oscillations in the directional solidification of PbSnTe  
*Period Obligations*  
08/01/85-07/31/86 FY85: \$40,983 TOTAL: \$40,983  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Anderson, T. J. LARC/Fripp, A. L. 13-Physics  
Narayanan, R.

**NAG 2-234 University of Florida 2358**  
Cognitive performance, arousal and emotional stress  
*Period Obligations*  
09/01/83-04/30/86 FY85: \$50,000 TOTAL: \$205,758  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Lang, P. J. ARC/Patton, R. M. 69-Psych, NEC  
Cuthbert, B. N.

**NAG 3-363 University of Florida 2359**  
Numerical study of fluid flow, heat transfer and combustion processes inside the combustion chamber of a direct-injection-stratified-charge rotary engine  
*Period Obligations*  
01/01/83-12/29/85 FY85: \$63,196 TOTAL: \$165,135  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Shih, T. I. LERC/Schock, H. J. 46-Mech Engr  
LERC/Willis, E. A.

**NAG 9-91 University of Florida 2360**  
Evolution of an Archean continental margin  
*Period Obligations*  
07/01/84-06/30/86 FY85: \$15,000 TOTAL: \$30,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Mueller, P. A. JSC/Phinney, W. C. 32-Geological Sci

**NAGW 320 University of Florida 2361**  
Analysis of Voyager radio data from Jupiter and Saturn  
*Period Obligations*  
06/01/82-07/31/84 FY85: TOTAL: \$82,438  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Carr, T. D. HQ-EL/Brunk, W. E. 31-Atmos Sci  
Lebo, G. R. HQ-EL/Evans, N.

**NAG10-7 University of Florida 2362**  
Design/test of an on-line biomedical computer library  
*Period Obligations*  
07/27/83-01/31/84 FY85: TOTAL: \$15,222  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Grimes, R. R. KSC/Buchanan, P. 56-Medical Sciences

**NAG10-12 University of Florida 2363**  
Stand alone on-line indiral support system  
*Period Obligations*  
09/01/84-12/31/84 FY85: TOTAL: \$9,914  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Grams, R. R. KSC/Buchanan, P. 56-Medical Sciences

**NAG10-20 University of Florida 2364**  
Content expansion of the clinical practice of the library of medicine  
*Period Obligations*  
03/20/85-03/20/86 FY85: \$49,905 TOTAL: \$49,905  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Grams, R. R. KSC/Buchanan, P. 56-Medical Sciences

**NAS 2-9976 University of Florida 2365**  
Experiment implementation of a lightning and radio emission detector  
*Period Obligations*  
05/31/78-06/30/86 FY85: \$7,500 TOTAL: \$73,100  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Lanzerotti, L. J. ARC/Wilhelmi, A. J. 31-Atmos Sci  
Uman, M. A. ARC/Tischler, E. T.

**NAS 2-11007 University of Florida 2366**  
Pioneer 10/11 imaging photopolarimeter (IPP) experiment observations of background starlight  
*Period Obligations*  
05/18/81-02/28/85 FY85: TOTAL: \$58,227  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Weinberg, J. L. ARC/Fimmel, R. O. 11-Astronomy  
ARC/Prevost, F.

**NAS 5-22908 University of Florida 2367**  
Nimbus-G experiment team for solar back-scattered ultraviolet and total ozone mapping system  
*Period Obligations*  
12/19/75-06/30/85 FY85: TOTAL: \$263,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Green, A. E. GSFC/Fleigh, A. F. 49-Engr, NEC  
GSFC/Oakes, A.



**NASA'S UNIVERSITY PROGRAM  
FLORIDA (Continued)**

**NAS 5-26383** **University of Florida** **2368**  
A shuttle Spacelab induced atmosphere experiment  
*Period* *Obligations*  
11/04/80-09/30/85 FY85: \$53,909 TOTAL: \$500,239  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Weinberg, J. GSFC/Volpe, F. 11-Astronomy

**NASW 3578** **University of Florida** **2369**  
Halley optical probe experiment (HOPE)  
*Period* *Obligations*  
10/01/83-09/30/86 FY85: \$53,867 TOTAL: \$516,833  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Weinberg, J. HQ-EL/Brunk, W. E. 11-Astronomy  
HQ-EL/Brinton, H. C.

**NASW 3624** **University of Florida** **2370**  
Operation of the NASA/Florida state technology applications center  
*Period* *Obligations*  
07/01/82-06/30/85 FY85: TOTAL: \$889,415  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Thornton, J. R. HQ-LG/Bivins, R. G. 49-Engr, NEC  
HQ-LG/Ault, L. A.

**NAS10-10932** **University of Florida** **2371**  
Flow meter and liquid level instrumentation  
*Period* *Obligations*  
02/17/84-02/17/85 FY85: TOTAL: \$135,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Farber KSC/Howard, R. 43-Chem Engr  
Oliver KSC/Padgett, M.

**NAS10-11020** **University of Florida** **2372**  
Studies of lightning strikes at launch complex 39  
*Period* *Obligations*  
07/10/84-07/10/85 FY85: TOTAL: \$18,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Brasley, W. KSC/Wesinberg, R. 31-Atmos Sci  
Uman, M. A.  
Thomson, E. M.

**NAS10-11188** **University of Florida** **2373**  
Conduct a study to develop the feasibility of using linkages to existing data base for the commercial use of space  
*Period* *Obligations*  
04/26/85-10/26/85 FY85: \$35,500 TOTAL: \$35,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Unavailable KSC/Cerrato, R. I. 99-Multi-Discip

**NAS10-11230** **University of Florida** **2374**  
Study entitled development of flow meter and liquid level transducers and instrument  
*Period* *Obligations*  
05/30/85-05/30/86 FY85: \$125,000 TOTAL: \$125,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Farber, E. A. KSC/Howard, R. M. 39-Env Sci, NEC

**NCA 2-42** **University of Florida** **2375**  
The determination of the topology of local separation on a three caliber tangent ogive  
*Period* *Obligations*  
06/01/85-05/31/86 FY85: \$17,500 TOTAL: \$17,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Clarkson, M. H. ARC/Chapman, G. T. 41-Aero Engr

**NCA 2-240301** **University of Florida** **2376**  
Drinking in animals  
*Period* *Obligations*  
01/01/83-12/31/84 FY85: TOTAL: \$55,972  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fregly, M. J. ARC/Greenleaf, J. E. 51-Biological Sci

**NCA 2-240401** **University of Florida** **2377**  
Reduced complexity structural modelling for automated aircraft synthesis  
*Period* *Obligations*  
05/01/84-09/01/85 FY85: TOTAL: \$20,493  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hajela, P. ARC/Kroo, I. M. 41-Aero Engr

**NCC 2-337** **University of Florida** **2378**  
Skeletal response to short term space flight  
*Period* *Obligations*  
04/01/85-03/31/86 FY85: \$4,000 TOTAL: \$4,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wronski, T. J. ARC/Holton, E. M. 51-Biological Sci

**NGT 10-005-802** **University of Florida** **2379**  
NASA graduate student researchers program  
*Period* *Obligations*  
06/01/81-08/31/84 FY85: TOTAL: \$24,170  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tesar, D. HQ-LB/Carter, C. H. 46-Mech Engr

**NGT 10-005-804** **University of Florida** **2380**  
Basic contract for graduate student researchers  
*Period* *Obligations*  
08/01/83-07/31/85 FY85: \$15,000 TOTAL: \$30,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tesar, D. HQ-LB/Owens, F. C. 46-Mech Engr

**NGT 10-005-805** **University of Florida** **2381**  
NASA graduate student researchers program  
*Period* *Obligations*  
06/01/85-05/31/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Abbaschian, G. J. HQ-LE/Owens, F. C. 41-Aero Engr

**NSG 2288** **University of Florida** **2382**  
A jet in a crossflow  
*Period* *Obligations*  
01/01/78-07/31/86 FY85: \$41,011 TOTAL: \$309,394  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fearn, R. L. ARC/Aoyagi, K. 41-Aero Engr  
ARC/Koenig, D. G.

**NASA'S UNIVERSITY PROGRAM  
FLORIDA (Continued)**

**NSG 7236 University of Florida 2383**  
Use of remote sensing in solving Florida's geological and coastal engineering problems  
*Period* *Obligations*  
07/01/76-06/30/86 FY85: TOTAL: \$760,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ruth, B. E. HQ-EL/Uyahov, J. T. 39-Env Sci, NEC  
Degner, J. D.

**NAS 5-27642 University of Miami 2390**  
Maintenance and operation of the application technology satellite (ATS-3) contractor will assume command and control of satellite tracking  
*Period* *Obligations*  
04/21/83-03/31/86 FY85: TOTAL: \$204,711  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Brown, D. O. GSFC/Wales, R. O. 49-Engr, NEC

**NAG 2-150 University of Miami 2384**  
Muscle fiber type distribution relative to muscle weakness: A new method  
*Period* *Obligations*  
12/01/81-05/31/84 FY85: TOTAL: \$73,800  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kerrick, W. G. ARC/Ellis, S. 59-Life Sci, NEC

**NAS 5-28745 University of Miami 2391**  
Northern Venezuelan structural geology from LANDSAT 5 thematic mapper data  
*Period* *Obligations*  
07/30/85-11/29/88 FY85: \$201,714 TOTAL: \$201,714  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Harrison, C. G. GSFC/Oseroff, H. 32-Geological Sci

**NAG 2-298 University of Miami 2385**  
Mathematical models in air traffic control  
*Period* *Obligations*  
06/01/84-05/31/86 FY85: \$33,778 TOTAL: \$79,780  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Friedman, M. F. ARC/Tobias, L. 41-Aero Engr  
ARC/Erzberger, H.

**NAS 8-33523 University of Miami 2392**  
Modification of a computer general circulation model of the Earth's atmosphere for the atmospheric general circulation experiment  
*Period* *Obligations*  
04/16/80-08/01/84 FY85: TOTAL: \$259,459  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pitcher, E. J. MSFC/Fowles, W. W. 31-Atmos Sci  
Malone, R. C. MSFC/Fichtl, G. H.

**NAG 5-414 University of Miami 2386**  
Continental and oceanic crustal magnetization investigations  
*Period* *Obligations*  
04/01/84-06/30/86 FY85: \$70,000 TOTAL: \$130,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Harrison, C. G. GSFC/Kouns, C. W. 32-Geological Sci  
GSFC/Allenby, R. J.

**NAS 9-15473 University of Miami 2393**  
Study of sodium homeostasis and renin-aldosterone during water immersion  
*Period* *Obligations*  
11/21/77-11/30/83 FY85: TOTAL: \$117,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Epstein, M. JSC/Huntoon, C. L. 56-Medical Sciences

**NAGW 273 University of Miami 2387**  
An investigation of the utility of ocean color imagery for delineation of oceanic processes in the western North Atlantic  
*Period* *Obligations*  
11/01/81-04/30/86 FY85: \$258,805 TOTAL: \$588,725  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gordan, H. R. HQ-EE/Davis, C. O. 33-Oceanography  
Brown, O. B. HQ-EB/Wilson, W. S.  
Evans, R. H.

**NCC 2-152 University of Miami 2394**  
Studies of flight-deck automation  
*Period* *Obligations*  
08/15/81-11/30/85 FY85: TOTAL: \$290,783  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wiener, E. L. ARC/Curry, R. E. 69-Psych, NEC

**NAGW 644 University of Miami 2388**  
Numerical model studies of the Venus atmosphere super-rotation  
*Period* *Obligations*  
08/01/84-07/31/86 FY85: \$73,000 TOTAL: \$138,936  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Covey, C. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Quaide, W. L.

**NGR 10-007-008 University of Miami 2395**  
Research in the Institute of Molecular Evolution in the School of Environmental and Planetary Sciences  
*Period* *Obligations*  
06/09/84-09/30/85 FY85: \$81,585 TOTAL: \$2,971,110  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fox, S. W. HQ-EB/Devincenzi, D. L. 12-Chemistry  
HQ-EB/Rambler, M. B.

**NAS 5-22963 University of Miami 2389**  
Nimbus G coastal zone color scanner sensor experiment  
*Period* *Obligations*  
02/02/76-02/28/86 FY85: \$28,806 TOTAL: \$355,043  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gordon, H. R. GSFC/Szajna, E. F. 31-Atmos Sci

**NAG 1-470 University of South Florida 2396**  
Fault tolerance with response time guarantee in distributed computing systems  
*Period* *Obligations*  
04/01/84-03/31/86 FY85: \$32,609 TOTAL: \$62,826  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kim, K. H. LARC/Murray, N. D. 22-Computer Science  
LARC/Will, R. W.

# **NASA'S UNIVERSITY PROGRAM FLORIDA (Continued)**

**NAGW 465**                      **University of South Florida**                      **2397**  
Development of in-site sensors to complement ocean color remote sensing

Period	Obligations
03/01/83-12/31/85	FY85: \$95,000      TOTAL: \$284,278
Prin. Invest.	NASA Tech. Officer      CASE Category
Carder, K. L.	HQ-EE/Esaias, W. E.      33-Oceanography
	HQ-EE/Wilson, W. S.

**NAGW 678**                      **University of South Florida**                      **2398**  
Simulation analysis of nonstationary CZCS series from continental shelves

Period	Obligations
12/01/84-11/30/85	FY85: \$223,214      TOTAL: \$223,214
Prin. Invest.	NASA Tech. Officer      CASE Category
Carder, K. L.	HQ-EE/Davis, C. A.      33-Oceanography
Walsh, J. J.	HQ-EE/Wilson, W. S.
Brown, O. B.	

**NAS 1-16844**                      **University of South Florida**                      **2399**  
Fabrication and test of monitor for NH3, NHO3, NH+4 and NH-3

Period	Obligations
09/30/81-12/31/83	FY85:      TOTAL: \$93,685
Prin. Invest.	NASA Tech. Officer      CASE Category
Braman, R. S.	LARC/Hoell, J.      31-Atmos Sci

**NCA 2-1**                      **University of South Florida**                      **2400**  
Development and performance evaluation of a biomedical instrument which measures local sweat rates

Period	Obligations
01/01/85-12/31/85	FY85: \$10,000      TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer      CASE Category
Spaul, W. A.	ARC/Greenleaf, J. E.      59-Life Sci, NEC

## **GEORGIA**

**NAG 1-410**                      **Atlanta University**                      **2401**  
Construction of finite difference schemes having special properties for ordinary and partial differential equations

Period	Obligations
10/01/83-09/30/85	FY85: \$89,983      TOTAL: \$269,983
Prin. Invest.	NASA Tech. Officer      CASE Category
Mickens, R. E.	LARC/Shoosmith, J. N.      21-Mathematics

**NAG 1-411**                      **Atlanta University**                      **2402**  
On inhomogeneous stellar media

Period	Obligations
10/01/83-09/30/85	FY85: \$157,127      TOTAL: \$287,096
Prin. Invest.	NASA Tech. Officer      CASE Category
Martin, B. J.	LARC/Jalufka, N. W.      13-Physics
	LARC/Conway, E. J.

**NAG 1-412**                      **Atlanta University**                      **2403**  
Implementation study of fuzzy automata with applications to the human-computer interface and feature detection in digitized images

Period	Obligations
10/01/83-09/30/85	FY85: \$99,935      TOTAL: \$259,935
Prin. Invest.	NASA Tech. Officer      CASE Category
Setzer, C. B.	LARC/Goode, P. W.      29-Math/Computer, NEC
Warsi, N.	

**NAG 1-413**                      **Atlanta University**                      **2404**  
Random equations in aerodynamics

Period	Obligations
10/01/83-09/30/84	FY85:      TOTAL: \$120,712
Prin. Invest.	NASA Tech. Officer      CASE Category
Bharucha-reid, A. T.	LARC/Desmarais, R. N.      41-Aero Engr

**NAG 3-113**                      **Atlanta University**                      **2405**  
Design and implementation of a networked automated laboratory

Period	Obligations
10/20/80-04/29/86	FY85: \$25,117      TOTAL: \$436,398
Prin. Invest.	NASA Tech. Officer      CASE Category
Reed, J. L.	LERC/Mapp, M. W.      19-Phys Sci, NEC
	LERC/O'donnell, P. M.

**NAG 2-87**                      **Emory University**                      **2406**  
Effect of decreased gravity on circulation in the rat

Period	Obligations
01/01/81-04/30/86	FY85: \$28,677      TOTAL: \$165,487
Prin. Invest.	NASA Tech. Officer      CASE Category
Popovic, V. P.	ARC/Sandler, H.      51-Biological Sci

**NAS 2-10527**                      **Emory University**                      **2407**  
Cardiovascular adaptation of white rats to decreased gravity of Space Shuttle/Spacelab inflight conditions

Period	Obligations
01/17/80-03/31/87	FY85: \$186,438      TOTAL: \$545,001
Prin. Invest.	NASA Tech. Officer      CASE Category
Popovic, V.	ARC/Gomersall, E. W.      51-Biological Sci

**NAS 2-10627**                      **Emory University**                      **2408**  
Maintenance of NASA primate resources and primate baseline data

Period	Obligations
05/01/80-09/30/84	FY85:      TOTAL: \$689,144
Prin. Invest.	NASA Tech. Officer      CASE Category
McClure, H. M.	ARC/Goldsboro, J. A.      51-Biological Sci
Gomersall, E. W.	ARC/Gomersall, E. W.

**NAG 1-50**                      **Georgia Institute of Technology**                      **2409**  
Development of an airborne laser photofragmentation

Period	Obligations
03/01/80-02/28/86	FY85: \$277,842      TOTAL: \$1,602,857
Prin. Invest.	NASA Tech. Officer      CASE Category
Davis, D. D.	LARC/Browell, E. V.      31-Atmos Sci
Bradshaw, J. D.	
Rogers, M.	

**NASA'S UNIVERSITY PROGRAM**  
**GEORGIA (Continued)**

**NAG 1-385 Georgia Institute of Technology 2410**  
 Diagnostic and theoretical studies of global tropospheric photochemistry  

Period	Obligations
07/15/83-07/14/86	FY85: \$79,000 TOTAL: \$227,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Chameides, W. L.	LARC/Reichle, H. G., Jr. 31-Atmos Sci
	LARC/Hypes, W. D.

**NAG 1-586 Georgia Institute of Technology 2417**  
 Theoretical and material studies of thin-film electroluminescent devices  

Period	Obligations
05/01/85-01/31/86	FY85: \$52,881 TOTAL: \$52,881
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Summers, C. J.	LARC/Robertson, J. B. 13-Physics
Brennan, K. F.	

**NAG 1-392 Georgia Institute of Technology 2411**  
 Modeling of transient heat pipe operation  

Period	Obligations
08/19/83-12/31/85	FY85: \$50,000 TOTAL: \$111,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Colwell, G. T.	LARC/Robinson, J. C. 46-Mech Engr
Hartley, J. G.	LARC/Hall, J. B., Jr.

**NAG 2-123 Georgia Institute of Technology 2418**  
 Pilot interaction with automated airborne decision making systems  

Period	Obligations
08/21/81-09/30/85	FY85: \$114,855 TOTAL: \$573,508
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Rouse, W. B.	ARC/Palmer, E. A. 69-Psych, NEC
Hammer, J. M.	
Govindaraj, T.	

**NAG 1-398 Georgia Institute of Technology 2412**  
 Rotor blade configuration modeling for composite designs  

Period	Obligations
08/18/83-12/31/84	FY85: TOTAL: \$25,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Rehfield, L. W.	LARC/Nixon, M. W. 41-Aero Engr
	LARC/Roderick, G. L.

**NAG 2-135 Georgia Institute of Technology 2419**  
 Development and evaluation of heat/impact resistant fabrics for the NASA TMG garment  

Period	Obligations
08/01/81-03/31/84	FY85: TOTAL: \$38,948
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Olson, L. H.	ARC/Webbon, B. W. 49-Engr, NEC

**NAG 1-430 Georgia Institute of Technology 2413**  
 A support architecture for reliable distributed computing systems  

Period	Obligations
11/09/83-11/08/85	FY85: \$47,464 TOTAL: \$94,866
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
McKendry, M. S.	LARC/Murray, N. D. 22-Computer Science
	LARC/Will, R. W.

**NAG 2-238 Georgia Institute of Technology 2420**  
 A new approach to structural modeling of rotor blades  

Period	Obligations
07/01/83-12/31/84	FY85: TOTAL: \$42,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Rehfield, L. W.	ARC/Hodges, D. H. 41-Aero Engr

**NAG 1-551 Georgia Institute of Technology 2414**  
 Development of emulation simulation thermal control model for space station application  

Period	Obligations
01/01/85-12/31/85	FY85: \$50,000 TOTAL: \$50,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Colwell, G. T.	LARC/Hall, J. B. 13-Physics
Hartley, J. G.	LARC/Wright, R. L.

**NAG 3-282 Georgia Institute of Technology 2421**  
 Infrared technology for satellite power conversion  

Period	Obligations
04/27/82-04/23/86	FY85: \$69,994 TOTAL: \$276,680
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Gallagher, J. J.	LERC/Krawczonek, W. M. 45-Elec Engr
Blue, M. D.	

**NAG 1-558 Georgia Institute of Technology 2415**  
 Sublamine analysis of interlaminar fracture in composites  

Period	Obligations
01/04/85-12/31/85	FY85: \$57,422 TOTAL: \$57,422
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Rehfield, L. W.	LARC/O'Brien, T. K. 47-Materials Engr
	LARC/Murri, G. B.

**NAG 3-346 Georgia Institute of Technology 2422**  
 Topics in analysis of inelastic behavior of structures at elevated temperatures  

Period	Obligations
12/10/82-10/14/85	FY85: \$50,345 TOTAL: \$170,528
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Atturi, S. N.	LERC/Chamis, C. C. 41-Aero Engr
	LERC/Hopkins, D. A.

**NAG 1-566 Georgia Institute of Technology 2416**  
 Sound propagation over uneven ground and irregular topography  

Period	Obligations
02/01/85-01/31/86	FY85: \$70,859 TOTAL: \$70,859
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Pierce, A. D.	LARC/Preisser, J. S. 13-Physics
Main, G. L.	LARC/Parrott, T. L.

**NAG 3-442 Georgia Institute of Technology 2423**  
 Infrared power cells for satellite power conversion  

Period	Obligations
06/28/83-12/31/84	FY85: TOTAL: \$49,852
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Summers, C. J.	LERC/Krawczonek, W. M. 13-Physics
Gallagher, J. J.	

# **NASA'S UNIVERSITY PROGRAM** **GEORGIA (Continued)**

**NAG 3-503 Georgia Institute of Technology 2424**  
Micromechanistic deformation response of anisotropic allows under repeated loading

Period	Obligations	
12/15/83-12/13/85	FY85: \$83,433	TOTAL: \$166,927
Prin. Invest.	NASA Tech. Officer	CASE Category
Antolovich, S. D.	LERC/Bill, R. C.	47-Materials Engr
Underwood, E.	LERC/MacKay, R. A.	
McDowell, D.		

**NAG 3-534 Georgia Institute of Technology 2425**  
Analysis of shell type structures subjected to time dependent mechanical and thermal loading

Period	Obligations	
04/15/84-04/14/86	FY85: \$75,805	TOTAL: \$136,691
Prin. Invest.	NASA Tech. Officer	CASE Category
Simitses, G. J.	LERC/Chamis, C. C.	41-Aero Engr
Carlson, R. L.	LERC/Hopkins, D. A.	

**NAG 3-600 Georgia Institute of Technology 2426**  
Feasibility analysis of reciprocating magnetic heat pumps

Period	Obligations	
01/02/85-02/01/86	FY85: \$63,852	TOTAL: \$63,852
Prin. Invest.	NASA Tech. Officer	CASE Category
Larson, A. V.	LERC/Brown, G. V.	49-Engr, NEC

**NAG 5-592 Georgia Institute of Technology 2427**  
Aircraft measurements of aerosol scattering and absorption

Period	Obligations	
07/15/85-10/31/85	FY85: \$10,000	TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Patterson, E. M.	GSFC/Fraser, R. S.	54-Env Biology

**NAGW 533 Georgia Institute of Technology 2428**  
Laboratory evaluation of microwaves absorption properties under simulated conditions for planetary atmospheres

Period	Obligations	
02/01/84-01/31/86	FY85: \$75,574	TOTAL: \$137,865
Prin. Invest.	NASA Tech. Officer	CASE Category
Steffes, P. G.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Quaide, W. L.	

**NAGW 698 Georgia Institute of Technology 2429**  
Theoretical studies of the chemical, microphysical, and dynamical effects of volcanic intermissions on the stratosphere

Period	Obligations	
01/01/85-12/31/85	FY85: \$53,279	TOTAL: \$53,279
Prin. Invest.	NASA Tech. Officer	CASE Category
Kiang, C. S.	HQ-EE/Schiffer, R. A.	31-Atmos Sci
Justus, C. G.		

**NAGW 729 Georgia Institute of Technology 2430**  
Global atmospheric gases experiment gage

Period	Obligations	
11/01/84-10/31/85	FY85: \$90,696	TOTAL: \$90,696
Prin. Invest.	NASA Tech. Officer	CASE Category
Unavailable	HQ-EE/Butler, D. M.	31-Atmos Sci
	HQ-EE/Demore, W. B.	

**NAG10-17 Georgia Institute of Technology 2431**  
Fatigue behavior of flex hoses and bellows due to flow induced vibration

Period	Obligations	
01/11/85-01/11/86	FY85: \$39,939	TOTAL: \$39,939
Prin. Invest.	NASA Tech. Officer	CASE Category
Desai, P. V.	KSC/Buehler, K.	99-Multi-Discip

**NAS 1-14654 Georgia Institute of Technology 2432**  
Investigation of the effects of long duration exposure on active optical system components

Period	Obligations	
10/14/76-10/31/85	FY85: \$110,266	TOTAL: \$329,518
Prin. Invest.	NASA Tech. Officer	CASE Category
Blue, M. D.	LARC/Clark, L. G.	45-Elec Engr
Gallagher, J. J.	LARC/Battista, J. D.	
Shackelford, R. G.		

**NAS 1-15370 Georgia Institute of Technology 2433**  
Holographic data storage crystals experiment for the long duration exposure facility (LDEF)

Period	Obligations	
04/21/78-10/31/85	FY85: \$15,000	TOTAL: \$46,808
Prin. Invest.	NASA Tech. Officer	CASE Category
Gaylord, T. K.	LARC/O'neal, R. L.	45-Elec Engr
Callen, W. R.	LARC/Clark, L. G.	

**NAS 1-16356 Georgia Institute of Technology 2434**  
Science support for Earth Radiation Budget Satellite (ERBS)/ stratospheric aerosol and gas experiment (SAGE)

Period	Obligations	
08/07/80-01/31/86	FY85: \$56,059	TOTAL: \$286,797
Prin. Invest.	NASA Tech. Officer	CASE Category
Grams, G. W.	LARC/McMaster, L. R.	31-Atmos Sci
	LARC/McCormick, M. P.	

**NAS 1-16357 Georgia Institute of Technology 2435**  
Science support for Earth Radiation Budget Satellite (ERBS)/ stratospheric aerosol and gas experiment (SAGE)

Period	Obligations	
08/07/80-08/31/86	FY85: \$48,492	TOTAL: \$185,020
Prin. Invest.	NASA Tech. Officer	CASE Category
Cunnold, D. M.	LARC/McMaster, L. R.	31-Atmos Sci
	LARC/McCormick, M. P.	

**NAS 1-17545 Georgia Institute of Technology 2436**  
Summer technological institute

Period	Obligations	
09/22/83-09/21/84	FY85:	TOTAL: \$75,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Freeston, W. D.	LARC/Lee, R. B.	99-Multi-Discip
	LARC/Merritt, V. B.	

**NAS 5-25817 Georgia Institute of Technology 2437**  
Study of Nimbus-7 applications investigation from priority 1 listing

Period	Obligations	
08/20/79-09/30/85	FY85:	TOTAL: \$82,506
Prin. Invest.	NASA Tech. Officer	CASE Category
Cunnold, D. M.	GSFC/Hurley, E. J.	39-Env Sci, NEC

# **NASA'S UNIVERSITY PROGRAM** **GEORGIA (Continued)**

## **NAS 5-27264 Georgia Institute of Technology 2438** The prediction of the dynamical impact of changes in stratospheric ozone

Period	Obligations	
07/01/82-12/31/85	FY85:	TOTAL: \$71,487
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cunnold, D.	GSFC/Rouzer, L. E.	31-Atmos Sci

## **NAS 8-35985 Georgia Institute of Technology 2445** Metallurgical specimen analysis

Period	Obligations	
06/21/84-06/20/85	FY85:	TOTAL: \$3,496
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Johnson, J. W.	MSFC/Johnston, M. H.	47-Materials Engr
	MSFC/Parr, R. A.	

## **NAS 5-28132 Georgia Institute of Technology 2439** Modification, installation, operation and maintenance of the advanced microwave moisture sounder (amm)

Period	Obligations	
04/06/84-10/05/84	FY85:	TOTAL: \$97,164
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gagliano, J.	GSFC/Dod, L. R.	31-Atmos Sci

## **NAS 9-16353 Georgia Institute of Technology 2446** Measurement of RF attenuation of CV102 flight thermal protection system (TPS) over antenna subsystem

Period	Obligations	
05/01/81-08/31/85	FY85:	TOTAL: \$211,719
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cooke, W. P.	JSC/Eggers, D. S.	45-Elec Engr

## **NAS 5-28575 Georgia Institute of Technology 2440** Human-computer interaction in supervisory control tasks cognitive models and computer aids

Period	Obligations	
11/21/84-03/21/87	FY85: \$136,220	TOTAL: \$136,220
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mitchell, C. M.	GSFC/Truskowski, W. F.	22-Computer Science

## **NAS 9-17381 Georgia Institute of Technology 2447** Space station antenna systems

Period	Obligations	
05/01/85-04/30/90	FY85: \$102,000	TOTAL: \$102,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cooke, W. P.	JSC/Eggers, D. S.	49-Engr, NEC
Dunn, A. G.		

## **NAS 5-28724 Georgia Institute of Technology 2441** Provide for 90/180 GHz radiometer for mounting onboard NASA CV-990 research aircraft

Period	Obligations	
01/29/85-08/16/85	FY85: \$99,446	TOTAL: \$99,446
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gagliano, J. A.	GSFC/Dod, L. R.	41-Aero Engr

## **NAS 9-17445 Georgia Institute of Technology 2448** Space station antenna test bed scanner measurement system design, evaluation, analysis and interface

Period	Obligations	
07/01/85-05/15/87	FY85: \$75,000	TOTAL: \$75,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cooke, B.	JSC/Tang, S.	45-Elec Engr

## **NAS 5-28747 Georgia Institute of Technology 2442** Modification of the advanced microwave moisture sounder and support of the CV-990 weather research flights

Period	Obligations	
05/06/85-09/30/85	FY85: \$59,988	TOTAL: \$59,988
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gagliano, J.	GSFC/Dod, L. R.	31-Atmos Sci

## **NAS10-10560 Georgia Institute of Technology 2449** Oxidant gas treatment

Period	Obligations	
10/06/82-08/31/83	FY85:	TOTAL: \$30,126
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Winnick, J.	KSC/Lundy, F. E., Jr.	43-Chem Engr
	KSC/English, J. G., Jr.	

## **NAS 8-32397 Georgia Institute of Technology 2443** Digitizing of LANDSAT data

Period	Obligations	
01/13/77-06/30/85	FY85:	TOTAL: \$24,316
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shackelford, R. G.	MSFC/Downs, S. W., Jr.	
Faust, N. L.	MSFC/Huffman, J. D.	39-Env Sci, NEC

## **NSG 2356 Georgia Institute of Technology 2450** Development of molded, coated fabric joints

Period	Obligations	
12/01/78-10/31/85	FY85: \$19,889	TOTAL: \$257,908
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Olson, L. H.	ARC/Vykukal, H. C.	49-Engr, NEC
Freeston, D.		

## **NAS 8-35048 Georgia Institute of Technology 2444** Ion implantation and plating to improve surface hardness and wear characteristics of 440 stainless steel for bearing application

Period	Obligations	
09/22/82-07/31/85	FY85: \$99,382	TOTAL: \$334,310
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Grenga, H. E.	MSFC/Dolan, F.	13-Physics
Hochman, R. F.	MSFC/Gause, R. L.	

## **NSG 2363 Georgia Institute of Technology 2451** In-situ measurements of optical properties of stratospheric aerosols using NASA U-2 aircraft

Period	Obligations	
02/01/79-12/31/85	FY85: \$48,000	TOTAL: \$343,611
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Grams, G. W.	ARC/Ferry, G. V.	31-Atmos Sci
	ARC/Snetsinger, K. G.	

**NASA'S UNIVERSITY PROGRAM  
GEORGIA (Continued)**

**NSG 5012 Georgia Institute of Technology 2452**  
Research in millimeter wave techniques

<i>Period</i>	<i>Obligations</i>	
06/15/74-06/30/86	FY85: \$30,273	TOTAL: \$862,099
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Forsythe, R. E.	GSFC/Dod, L. R.	45-Elec Engr
	GSFC/Shiue, J. C.	

**NAG 5-496 Georgia Southern College 2453**  
Laboratory studies of small carbon granules

<i>Period</i>	<i>Obligations</i>	
02/01/85-01/31/86	FY85: \$2,000	TOTAL: \$2,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nelson, R. H.	GSFC/Donn, B.	12-Chemistry

**NAG 5-242 Georgia State University 2454**  
Satellite observations of selected astronomical objects and quasars

<i>Period</i>	<i>Obligations</i>	
07/01/82-01/31/86	FY85: \$11,400	TOTAL: \$25,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Miller, H. R.	GSFC/Kondo, Y.	11-Astronomy

**NAG 5-280 University of Georgia 2455**  
Investigation of rapidly evolving short period eclipsing binaries

<i>Period</i>	<i>Obligations</i>	
10/01/82-11/30/84	FY85:	TOTAL: \$9,790
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shaw, J. S.	GSFC/Kondo, Y.	11-Astronomy
Guinan, E. F.		

**NAG 5-288 University of Georgia 2456**  
Potential heighting accuracies and information content of stereoscope sensor data

<i>Period</i>	<i>Obligations</i>	
01/15/83-02/28/85	FY85:	TOTAL: \$26,641
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Welch, R. A.	GSFC/Blodget, H. W.	19-Phys Sci, NEC
	GSFC/Cressy, P. J.	

**NAG 5-365 University of Georgia 2457**  
Observations of selected white dwarf binaries

<i>Period</i>	<i>Obligations</i>	
08/15/83-04/14/86	FY85: \$8,000	TOTAL: \$17,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Scott, J. S.	GSFC/Kondo, Y.	11-Astronomy

**NAG 5-516 University of Georgia 2458**  
Comparison of simulation modeling and satellite techniques for monitoring ecological processes

<i>Period</i>	<i>Obligations</i>	
04/01/85-03/31/86	FY85: \$25,000	TOTAL: \$25,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Box, E. O.	GSFC/Tucker, J.	59-Life Sci, NEC
Tucker, C. J.		

**NAS 5-27383 University of Georgia 2459**  
Comparative assessment of LANDSAT-D MSS and TM data quality

<i>Period</i>	<i>Obligations</i>	
10/12/82-12/31/85	FY85: \$20,000	TOTAL: \$156,797
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Welch, R. A.	GSFC/Oseroff, H.	49-Engr, NEC
Faust, N. L.	GSFC/Stuart, L. M.	

**NASW 3247 University of Georgia 2460**  
For operation of Cosmic

<i>Period</i>	<i>Obligations</i>	
05/01/79-04/30/86	FY85: \$330,000	TOTAL: \$1,701,889
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carmon, J. L.	HQ-LG/Ault, L. A.	22-Computer Science
	HQ-IU/Bivins, R. G.	

**HAWAII**

**NAG 2-165 University of Hawaii - Manoa 2461**  
Astronomical applications for hybrid silicon charged coupled device detector arrays

<i>Period</i>	<i>Obligations</i>	
03/01/82-12/31/85	FY85: \$20,195	TOTAL: \$169,198
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Capps, R. W.	ARC/Goebel, J. H.	11-Astronomy
Hall, D. N.	ARC/McCreight, C. R.	

**NAG 2-262 University of Hawaii - Manoa 2462**  
Terrain analysis of Pioneer Venus altimetry data

<i>Period</i>	<i>Obligations</i>	
10/01/83-12/31/85	FY85: \$24,991	TOTAL: \$48,607
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mouginis-mark, P.	ARC/Fimmel, R. O.	11-Astronomy
	ARC/Craig, R. A.	

**NAG 2-295 University of Hawaii - Manoa 2463**  
Determination of stellar radial velocity precision attainable with a coude spectrograph

<i>Period</i>	<i>Obligations</i>	
07/01/84-12/31/85	FY85:	TOTAL: \$9,434
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Heacox, W. D.	ARC/Black, D. C.	11-Astronomy
	ARC/Rathjen, S.	

**NAG 5-146 University of Hawaii - Manoa 2464**  
Magnesium observations of a young cluster

<i>Period</i>	<i>Obligations</i>	
03/15/81-12/31/85	FY85: \$34,000	TOTAL: \$246,124
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Simon, T.	GSFC/Kondo, Y.	11-Astronomy
Strom, S. E.		
Ayres, T. R.		

**NASA'S UNIVERSITY PROGRAM**  
**HAWAII (Continued)**

**NAG 5-407 University of Hawaii - Manoa 2465**  
Coding for reliable satellite communications

<i>Period</i>	<i>Obligations</i>	
07/01/84-06/30/86	FY85: \$63,318	TOTAL: \$103,318
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shu, Lin	GSFC/Morakis, J. C.	49-Engr, NEC
	GSFC/Miller, W. H.	

**NAG 5-539 University of Hawaii - Manoa 2466**  
Machine vision for high technology

<i>Period</i>	<i>Obligations</i>	
07/01/85-06/30/86	FY85: \$40,000	TOTAL: \$40,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Weldon, E. J.	GSFC/Miller, W. H.	49-Engr, NEC
Horn, P. K.	GSFC/Morakis, J. C.	

**NAG 8-458 University of Hawaii - Manoa 2467**  
Studies of the X-ray emission from distant clusters of galaxies

<i>Period</i>	<i>Obligations</i>	
11/01/83-12/31/84	FY85:	TOTAL: \$22,320
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Henry, J. P.	MSFC/Johnson, W. G.	11-Astronomy

**NAG 8-543 University of Hawaii - Manoa 2468**  
An atlas of X-ray emission maps of a complete sample of Abell clusters

<i>Period</i>	<i>Obligations</i>	
08/01/85-07/31/86	FY85: \$25,398	TOTAL: \$25,398
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Henry, J. P.	MSFC/Johnson, W. G.	11-Astronomy

**NAGW 37 University of Hawaii - Manoa 2469**  
User support and data reduction and analysis of lunar core images

<i>Period</i>	<i>Obligations</i>	
03/01/80-11/30/85	FY85:	TOTAL: \$102,892
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McCord, T. B.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Boyce, J.	

**NAGW 133 University of Hawaii - Manoa 2470**  
Volatile evolution

<i>Period</i>	<i>Obligations</i>	
02/01/81-01/31/86	FY85: \$52,000	TOTAL: \$262,180
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fanale, F. P.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAGW 136 University of Hawaii - Manoa 2471**  
Longitudinal asymmetries on Callisto and Europa

<i>Period</i>	<i>Obligations</i>	
02/01/81-12/31/84	FY85:	TOTAL: \$24,515
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Morrison, D.	HQ-EL/Boyce, J. M.	32-Geological Sci

**NAGW 153 University of Hawaii - Manoa 2472**  
A study of the Io-associated plasma and neutral sodium cloud

<i>Period</i>	<i>Obligations</i>	
04/01/81-09/30/86	FY85:	TOTAL: \$93,737
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cruikshank, D.	HQ-EL/Brinton, H. C.	13-Physics
	HQ-EL/Brunk, W. E.	

**NAGW 171 University of Hawaii - Manoa 2473**  
Regolith adsorption and exchange of atmospheric constituents on Mars

<i>Period</i>	<i>Obligations</i>	
04/01/81-02/29/84	FY85:	TOTAL: \$139,401
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fanale, F. P.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/Boyce, J. M.	

**NAGW 237 University of Hawaii - Manoa 2474**  
Geologic studies of planetary volcanic and impact processes

<i>Period</i>	<i>Obligations</i>	
08/01/81-03/31/86	FY85: \$70,345	TOTAL: \$244,847
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hawke, B. R.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAGW 318 University of Hawaii - Manoa 2475**  
Development of island stations for satellite read-out of in-site sensing of environmental properties

<i>Period</i>	<i>Obligations</i>	
04/01/82-09/30/85	FY85: \$97,726	TOTAL: \$531,365
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McCord, T. B.	HQ-EE/Patzert, W. C.	33-Oceanography
Wyrtki, K.	HQ-EE/Wilson, W. S.	
Chave, K.		

**NAGW 348 University of Hawaii - Manoa 2476**  
Io's surface and atmosphere

<i>Period</i>	<i>Obligations</i>	
07/21/82-07/20/84	FY85:	TOTAL: \$129,711
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fanale, F. P.	HQ-EL/Williams, R. J.	32-Geological Sci
	HQ-EL/French, B. M.	

**NAGW 437 University of Hawaii - Manoa 2477**  
Analysis of Martian surface materials using radar thermal and color data and geological evolution of the cavity cratered hemisphere of Mars

<i>Period</i>	<i>Obligations</i>	
04/01/83-02/28/86	FY85: \$50,000	TOTAL: \$145,956
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mark, P. M.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAGW 498 University of Hawaii - Manoa 2478**  
Thermophysics of satellites and asteroids

<i>Period</i>	<i>Obligations</i>	
10/01/83-09/30/85	FY85:	TOTAL: \$27,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Morrison, D.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	



**NASA'S UNIVERSITY PROGRAM**  
**HAWAII (Continued)**

**NAGW 541 University of Hawaii - Manoa 2479**  
 A study of long flows of Mauna Loa  
*Period Obligations*  
 02/15/84-02/14/86 FY85: \$30,991 TOTAL: \$61,589  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Walker, G. P. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 583 University of Hawaii - Manoa 2480**  
 Volatile migration and phase changes on Mars  
*Period Obligations*  
 02/01/84-12/31/85 FY85: \$55,000 TOTAL: \$109,999  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Fanale, F. P. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 589 University of Hawaii - Manoa 2481**  
 Satellite surface compositional units  
*Period Obligations*  
 02/01/84-11/30/85 FY85: \$42,000 TOTAL: \$82,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 McCord, T. B. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 622 University of Hawaii - Manoa 2482**  
 A program of ground based solar observations in support of the Solar Maximum Mission  
*Period Obligations*  
 04/01/84-12/31/85 FY85: TOTAL: \$80,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Labonte, B. HQ-EZ/Gergely, T. 13-Physics

**NAGW 633 University of Hawaii - Manoa 2483**  
 Volatiles on planetary satellites  
*Period Obligations*  
 06/21/84-06/20/86 FY85: \$60,000 TOTAL: \$120,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Fanale, F. P. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 636 University of Hawaii - Manoa 2484**  
 Studies of the reflectance of small solar system bodies  
*Period Obligations*  
 07/15/84-07/14/85 FY85: TOTAL: \$24,751  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Brown, R. H. HQ-EL/Brinton, H. C. 11-Astronomy  
 HQ-EL/Hillman, J. J.

**NAGW 712 University of Hawaii - Manoa 2485**  
 Spectral studies of possible asteroid materials  
*Period Obligations*  
 01/01/85-12/31/85 FY85: \$35,000 TOTAL: \$35,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bell, J. F. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 723 University of Hawaii - Manoa 2486**  
 Modeling of the solar chromosphere by submillimeter observations of solar comb  
*Period Obligations*  
 03/15/85-03/14/86 FY85: \$56,500 TOTAL: \$56,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Becklin, E. E. HQ-EZ/Spicer, D. S. 13-Physics

**NAGW 726 University of Hawaii - Manoa 2487**  
 Spectral reflectance (0.4 5.0 microns) of sulfur related compounds and mixtures  
*Period Obligations*  
 05/01/85-04/30/86 FY85: \$38,000 TOTAL: \$38,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Gradie, J. C. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 755 University of Hawaii - Manoa 2488**  
 Characterization of infrared detector arrays  
*Period Obligations*  
 06/15/85-01/14/86 FY85: \$53,530 TOTAL: \$53,530  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hall, D. N. HQ-EZ/Bogges, N. W. 13-Physics  
 HQ-EZ/Weiler, E. J.

**NAGW 802 University of Hawaii - Manoa 2489**  
 Infrared spectral studies of asteroids  
*Period Obligations*  
 09/01/85-08/31/86 FY85: \$34,715 TOTAL: \$34,715  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bell, J. F. HQ-EL/Brinton, H. 11-Astronomy  
 HQ-EL/Bergstrahl, J. T.

**NAS 5-25181 University of Hawaii - Manoa 2490**  
 Modifications to and operations and maintenance of the Lunar Laser Observatory at the University of Hawaii in support of various satellite missions  
*Period Obligations*  
 08/09/78-09/30/84 FY85: TOTAL: \$3,058,226  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jefferies, J. T. GSFC/Hughes, W. E. 11-Astronomy  
 GSFC/Gardner, V.

**NAS 5-28403 University of Hawaii - Manoa 2491**  
 Establishment operation and maintenance of a command and control capability for the ATS 1 spacecraft  
*Period Obligations*  
 01/06/84-09/30/86 FY85: \$29,830 TOTAL: \$231,704  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Longfield, D. GSFC/Wales, R. O. 49-Engr, NEC

**NAS 5-28595 University of Hawaii - Manoa 2492**  
 Modification to and maintenance and operation of the lunar and satellite laser ranging ground station equipment at Mt. Haleakala Maui Hawaii in support of lunar and satellite tracking missions  
*Period Obligations*  
 10/01/84-09/30/86 FY85: \$707,500 TOTAL: \$707,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hall, D. N. GSFC/Shawe, M. E. 11-Astronomy  
 Bonsack, W. B. GSFC/Portas, S. B.

# **NASA'S UNIVERSITY PROGRAM** **HAWAII (Continued)**

**NASW 3159 University of Hawaii - Manoa 2493**  
 Provision of support during the preparatory stage for operation of the NASA infrared telescope facility

Period	Obligations	
01/01/78-12/31/85	FY85: \$1,758,945	TOTAL: \$9,511,259
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hall, D. N.	HQ-EL/Brunk, W.	11-Astronomy
	HQ-EL/Hillman, J. J.	

**NASW 3566 University of Hawaii - Manoa 2494**  
 Establishment of a planetary image center at the University of Hawaii

Period	Obligations	
11/14/81-11/14/85	FY85: \$24,993	TOTAL: \$65,396
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hawke, B. R.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NASW 4018 University of Hawaii - Manoa 2495**  
 Advanced terrestrial remote sensing

Period	Obligations	
01/01/85-12/31/86	FY85: \$70,000	TOTAL: \$70,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Singer, R. B.	HQ-EE/Evans, D. L.	32-Geological Sci
Blake, P. L.	HQ-EE/Arnold, R. J.	

**NGF 12-001-103 University of Hawaii - Manoa 2496**  
 Construction and furnishing of a permanent mid level facility (MLF) at Hale Pohaku in support of NASA's IRTF facility

Period	Obligations	
10/01/82-06/30/86	FY85:	TOTAL: \$1,479,901
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Jefferies, J. T.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Brinton, H. C.	

**NGL 12-001-011 University of Hawaii - Manoa 2497**  
 Research in coronal and chromospheric physics

Period	Obligations	
11/16/64-10/31/85	FY85: \$230,000	TOTAL: \$5,387,593
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hall, D. N.	HQ-EZ/Bohlin, J. D.	11-Astronomy
	HQ-EZ/Spicer, D. S.	

**NGL 12-001-057 University of Hawaii - Manoa 2498**  
 Research in planetary studies

Period	Obligations	
05/21/68-06/30/86	FY85: \$1,217,803	TOTAL: \$7,884,727
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hall, D. N.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Bergstrahl, J. T.	

**NGR 12-001-109 University of Hawaii - Manoa 2499**  
 N-heterocyclic compounds role in chemical evolution distribution in meteorites ancient sediments and as products of spark discharge reactions

Period	Obligations	
06/26/72-11/14/85	FY85: \$66,866	TOTAL: \$591,793
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Folsome, C. E.	HQ-EB/Devincenzi, D. L.	12-Chemistry
	HQ-EB/Rambler, M. B.	

**NGT 12-004-800 University of Hawaii - Manoa 2500**  
 NASA graduate student researchers program

Period	Obligations	
07/01/85-06/30/86	FY85: \$18,000	TOTAL: \$18,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fenale, F. P.	HQ-LE/Owens, F. C.	13-Physics

**NGT 12-004-801 University of Hawaii - Manoa 2501**  
 NASA graduate student researchers program

Period	Obligations	
07/01/85-06/30/86	FY85: \$18,000	TOTAL: \$18,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sinton, J. M.	HQ-LE/Owens, F. C.	32-Geological Sci

**NSG 7312 University of Hawaii - Manoa 2502**  
 Remote compositional mapping of the lunar surface

Period	Obligations	
02/01/77-04/14/86	FY85: \$262,000	TOTAL: \$1,982,002
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McCord, T. B.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NSG 7323 University of Hawaii - Manoa 2503**  
 Research in planetary astronomy

Period	Obligations	
02/01/77-02/28/86	FY85: \$150,788	TOTAL: \$971,384
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McCord, T. B.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Bergstrahl, J. T.	

**NSG 7403 University of Hawaii - Manoa 2504**  
 Study of physical processes affecting water ice on outer solar system objects

Period	Obligations	
12/01/77-09/30/85	FY85:	TOTAL: \$82,234
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pilcher, C. B.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NSG 7462 University of Hawaii - Manoa 2505**  
 An investigation of the mineralogy and petrology of meteorite parent bodies utilizing reflectance spectroscopy

Period	Obligations	
07/15/78-04/30/84	FY85:	TOTAL: \$187,814
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gaffey, M. J.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/French, B. M.	

**NSG 7536 University of Hawaii - Manoa 2506**  
 Research in ultraviolet spectroscopy

Period	Obligations	
11/01/78-10/31/85	FY85: \$125,000	TOTAL: \$818,176
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Labonte, B. J.	HQ-EZ/Thomas, R. J.	13-Physics
	HQ-EZ/Spicer, D. S.	



# **NASA'S UNIVERSITY PROGRAM** **ILLINOIS (Continued)**

**NAG 3-345 Northwestern University 2520**  
Non-involute helical gears: Methods of generation, geometry of surfaces, precision, contract and bending stresses and lubrication

Period	Obligations
10/02/82-03/31/85	FY85: TOTAL: \$94,791
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Cheng, H. S.	LERC/Coy, J. J. 46-Mech Engr
Litvin, F. L.	

**NAG 3-361 Northwestern University 2521**  
Lean-limit phenomena

Period	Obligations
04/04/83-09/30/84	FY85: TOTAL: \$75,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Law, C. K.	LERC/Briehl, D. 43-Chem Engr

**NAG 3-501 Northwestern University 2522**  
Electrical properties of materials for high temperature strain gage applications

Period	Obligations
12/21/83-02/20/86	FY85: \$92,625 TOTAL: \$210,876
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Brittain, J. O.	LERC/Englund, D. R. 47-Materials Engr

**NAG 3-535 Northwestern University 2523**  
Variational approach to probabilistic finite elements

Period	Obligations
05/01/84-04/29/86	FY85: \$70,683 TOTAL: \$141,090
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Belytschko, T.	LERC/Chamis, C. C. 41-Aero Engr
Liu, E. K.	LERC/Hopkins, D. A.

**NAG 3-635 Northwestern University 2524**  
Develop theoretical and numerical models of microwave scattering of finite, electrically large, three-dimensional reentrant structures and ducts

Period	Obligations
06/01/85-05/31/86	FY85: \$49,995 TOTAL: \$49,995
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Taflove, A.	LERC/Baumeister, K. J. 41-Aero Engr

**NAG 5-181 Northwestern University 2525**  
Research relative to electroformed X-ray mirrors

Period	Obligations
05/15/81-01/31/86	FY85: \$65,006 TOTAL: \$160,405
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Ulmer, M. P.	GSFC/Early, L. J. 11-Astronomy
	GSFC/Pless, R. H.

**NAGW 339 Northwestern University 2526**  
Biotic factors as homeostatic controls of biogeochemical cycles: Geological past and present

Period	Obligations
06/01/82-08/31/84	FY85: TOTAL: \$119,291
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Lerman, A.	HQ-EB/Rambler, M. B. 51-Biological Sci
Garrels, R. M.	HQ-EB/Devincenzi, D. L.

**NAGW 768 Northwestern University 2527**  
Theoretical studies of high energy transients

Period	Obligations
07/15/85-07/14/87	FY85: \$150,273 TOTAL: \$150,273
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Taam, R. E.	HQ-EZ/Stencel, R. E. 13-Physics
	HQ-EZ/Weiler, E. J.

**NAS 5-27238 Northwestern University 2528**  
SLR/VLBI investigations of regional lithospheric deformation and contemporary plate motions

Period	Obligations
07/15/82-01/31/87	FY85: \$55,000 TOTAL: \$164,998
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Speed, R. C.	GSFC/Mead, G. D. 32-Geological Sci
Gordon, R. G.	
Jurdy, D. M.	

**NAS 8-33881 Northwestern University 2529**  
Thermocapillary flows and their stability: Effects of surface layers and contamination

Period	Obligations
07/11/80-12/30/83	FY85: TOTAL: \$387,185
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Davis, S. H.	MSFC/Yates, I. C., Jr. 19-Phys Sci, NEC
	MSFC/Schofer, C. F.

**NAGW Southern Illinois University - Carbondale 2530**  
Origin and evolution of osmoregulatory mechanisms in blue-green algae

Period	Obligations
06/15/82-12/01/85	FY85: \$42,000 TOTAL: \$249,613
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Yopp, J. H.	HQ-EB/Devincenzi, D. L. 51-Biological Sci

**NAGW 707 Southern Illinois University - Carbondale 2531**  
Groundwater sapping studies

Period	Obligations
02/01/85-01/31/86	FY85: \$21,190 TOTAL: \$21,190
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Kochel, R. C.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

**NCA 2-735201 Southern Illinois University - Carbondale 2532**  
Signal processing methods for gas chromatographic analysis

Period	Obligations
06/01/82-07/01/84	FY85: TOTAL: \$32,406
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Phillips, J. B.	ARC/Carle, G. C. 12-Chemistry

**NCA 2-735401 Southern Illinois University - Carbondale 2533**  
Studies of the chemistry of the helium metastable ionization detector

Period	Obligations
07/01/84-06/30/86	FY85: \$5,801 TOTAL: \$44,046
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Phillips, J. B.	ARC/Carle, G. C. 12-Chemistry

**NASA'S UNIVERSITY PROGRAM  
ILLINOIS (Continued)**

**NAG 2-148 University of Chicago 2534**  
Physiology of the vestibular system  
*Period Obligations*  
12/01/81-11/30/85 FY85: \$58,000 TOTAL: \$220,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Goldberg, J. M. ARC/Daunton, N. G. 51-Biological Sci  
ARC/Corcoran, M. L.

**NAG 5-318 University of Chicago 2541**  
Ultracold bolometers for infrared detection from orbiting telescopes  
*Period Obligations*  
05/01/83-01/31/86 FY85: TOTAL: \$114,217  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Harper, D. A. GSFC/Moseley, S. H. 19-Phys Sci, NEC

**NAG 2-237 University of Chicago 2535**  
The fossil record of periodic extinction  
*Period Obligations*  
05/01/83-11/14/85 FY85: \$33,000 TOTAL: \$91,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Raup, D. M. ARC/Billingham, J. 51-Biological Sci  
Sepkoski, J. J.

**NAG 5-394 University of Chicago 2542**  
Glaciological field research in west antarctic  
*Period Obligations*  
02/15/84-02/14/86 FY85: \$15,000 TOTAL: \$29,471  
*Prin. Invest. NASA Tech. Officer CASE Category*  
MacAyeal, D. R. GSFC/Bindschadler, R. A.  
GSFC/Zwally, H. J. 32-Geological Sci

**NAG 2-364 University of Chicago 2536**  
Submillimeter bandpass filters for solar observations  
*Period Obligations*  
08/01/85-07/31/86 FY85: \$12,500 TOTAL: \$12,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hildebrand, R. H. ARC/Werner, M. W. 11-Astronomy  
ARC/Roellig, T. P.

**NAG 5-406 University of Chicago 2543**  
Lyman alpha halos of galaxies  
*Period Obligations*  
06/15/84-07/31/85 FY85: \$7,000 TOTAL: \$14,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
York, D. G. GSFC/Kondo, Y. 11-Astronomy  
Jenkins, E. B.

**NAG 5-129 University of Chicago 2537**  
Parameterization of cumulus convection and relative effects of clouds  
*Period Obligations*  
12/15/80-07/31/84 FY85: TOTAL: \$111,182  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kuo, H. L. GSFC/Kalnay, E. 31-Atmos Sci

**NAG 5-464 University of Chicago 2544**  
Ultraviolet observations of the star vega's system material  
*Period Obligations*  
08/15/84-08/14/86 FY85: \$19,043 TOTAL: \$26,043  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Harper, D. A. GSFC/Kondo, Y. 11-Astronomy  
Frisch, P. C.  
Lowenstein, R.

**NAG 5-255 University of Chicago 2538**  
Observations of interstellar carbon  
*Period Obligations*  
07/15/82-07/14/86 FY85: TOTAL: \$20,589  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hobbs, L. M. GSFC/Kondo, Y. 11-Astronomy  
Shull, J. M.

**NAG 5-551 University of Chicago 2545**  
Integrated spectra of globular clusters  
*Period Obligations*  
06/01/85-05/31/86 FY85: \$10,364 TOTAL: \$10,364  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kron, R. G. GSFC/Kondo, Y. 11-Astronomy

**NAG 5-286 University of Chicago 2539**  
Absorption measure of gas in galactic holes  
*Period Obligations*  
01/01/83-08/31/86 FY85: \$69,100 TOTAL: \$128,553  
*Prin. Invest. NASA Tech. Officer CASE Category*  
York, D. G. GSFC/Kondo, Y. 12-Chemistry  
Jenkins, E. B.

**NAG 5-704 University of Chicago 2546**  
Interstellar clouds near the Sun  
*Period Obligations*  
09/01/85-08/31/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Frisch, P. C. GSFC/Kondo, Y. 11-Astronomy

**NAG 5-308 University of Chicago 2540**  
Cosmic ray composition investigations  
*Period Obligations*  
04/01/83-11/30/85 FY85: \$73,392 TOTAL: \$347,099  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wiedenbeck, M. E. GSFC/Wales, R. O. 13-Physics  
GSFC/Corrigan, J. P.

**NAG 5-706 University of Chicago 2547**  
Research relative to astrophysical studies of IMP satellite data  
*Period Obligations*  
10/01/85-12/31/85 FY85: \$20,172 TOTAL: \$20,172  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Simpson, J. A. GSFC/Wales, R. O. 11-Astronomy

**NASA'S UNIVERSITY PROGRAM**  
**ILLINOIS (Continued)**

<b>NAG 9-47</b>	<b>University of Chicago</b>	<b>2548</b>
Mineralogy and chemistry of planets and meteorites		
<i>Period</i>	<i>Obligations</i>	
02/01/83-01/31/86	FY85: \$55,000	TOTAL: \$240,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, J. V.	JSC/Browne, I. D.	13-Physics
Steele, I. M.		

<b>NAG 9-51</b>	<b>University of Chicago</b>	<b>2549</b>
Isotope studies of the Moon and meteorites		
<i>Period</i>	<i>Obligations</i>	
02/01/83-02/01/86	FY85: \$218,000	TOTAL: \$629,758
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Clayton, R. N.	JSC/Browne, I. D.	11-Astronomy
Mayeda, T. K.		
Hutcheon, I. D.		

<b>NAG 9-52</b>	<b>University of Chicago</b>	<b>2550</b>
Age, origin, and composition of meteorites		
<i>Period</i>	<i>Obligations</i>	
03/01/83-01/31/86	FY85: \$268,000	TOTAL: \$715,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Anders, E.	JSC/Browne, I. D.	32-Geological Sci
Lewis, R. S.		

<b>NAG 9-54</b>	<b>University of Chicago</b>	<b>2551</b>
Chemical aspects of the origin of the solar		
<i>Period</i>	<i>Obligations</i>	
04/01/83-03/31/86	FY85: \$173,000	TOTAL: \$500,824
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Grossman, L.	JSC/Browne, I. D.	32-Geological Sci

<b>NAG 9-67</b>	<b>University of Chicago</b>	<b>2552</b>
Thermal models for the Archean		
<i>Period</i>	<i>Obligations</i>	
02/01/84-02/01/86	FY85: \$34,000	TOTAL: \$66,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Richter, F. M.	JSC/Phinney, W. C.	32-Geological Sci

<b>NAG 9-106</b>	<b>University of Chicago</b>	<b>2553</b>
Development of an X-ray fluorescence facility at the national synchrotron light source for research on NASA supported research		
<i>Period</i>	<i>Obligations</i>	
06/01/85-06/01/86	FY85: \$80,000	TOTAL: \$80,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, J. V.	JSC/Browne, I. D.	59-Life Sci, NEC

<b>NAGW 123</b>	<b>University of Chicago</b>	<b>2554</b>
Supernovae as cosmological distance indicators		
<i>Period</i>	<i>Obligations</i>	
12/01/80-09/30/84	FY85:	TOTAL: \$85,510
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Arnett, W. D.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Opp, A. G.	

<b>NAGW 405</b>	<b>University of Chicago</b>	<b>2555</b>
Copernicus data analysis and interpretation		
<i>Period</i>	<i>Obligations</i>	
12/01/82-04/30/85	FY85:	TOTAL: \$210,211
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
York, D. G.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

<b>NAGW 423</b>	<b>University of Chicago</b>	<b>2556</b>
Alpha particle technique for chemical analysis of planetary surfaces and atmospheres		
<i>Period</i>	<i>Obligations</i>	
02/01/83-12/31/84	FY85:	TOTAL: \$85,346
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Turkevich, A.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/Boyce, J. L.	

<b>NAGW 460</b>	<b>University of Chicago</b>	<b>2557</b>
Relationship between phycoethrin fluorescence and productivity in marine synechococcus		
<i>Period</i>	<i>Obligations</i>	
05/15/83-05/31/86	FY85: \$94,332	TOTAL: \$125,311
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Alberte, R. S.	HQ-EE/Davis, C. O.	33-Oceanography
	HQ-EE/Wilson, W. S.	

<b>NAGW 507</b>	<b>University of Chicago</b>	<b>2558</b>
Gaseous halos of galaxies		
<i>Period</i>	<i>Obligations</i>	
11/01/83-04/30/86	FY85:	TOTAL: \$28,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
York, D. G.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

<b>NAGW 568</b>	<b>University of Chicago</b>	<b>2559</b>
Statistical analysis of Nimbus-4 and Nimbus-7 satellite ozone data for trend detection		
<i>Period</i>	<i>Obligations</i>	
01/01/84-06/30/85	FY85:	TOTAL: \$34,986
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tiao, G. C.	HQ-EE/Butler, D. M.	31-Atmos Sci
	HQ-EE/Watson, R. T.	

<b>NAGW 655</b>	<b>University of Chicago</b>	<b>2560</b>
Development of mercuric iodide uncooled X-ray detectors and spectrometers for space missions		
<i>Period</i>	<i>Obligations</i>	
09/01/84-08/31/85	FY85:	TOTAL: \$35,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Economou, T. E.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/Vecelus, F.	

<b>NAGW 671</b>	<b>University of Chicago</b>	<b>2561</b>
Workshop series on local interstellar material		
<i>Period</i>	<i>Obligations</i>	
11/01/84-09/15/86	FY85: \$75,710	TOTAL: \$75,710
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
York, D. G.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

**NASA'S UNIVERSITY PROGRAM**  
**ILLINOIS (Continued)**

**NAGW 741** **University of Chicago** **2562**  
In situ chemical analysis on solar missions  
*Period* *Obligations*  
04/01/85-03/31/86 FY85: \$110,000 TOTAL: \$110,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Turkevich, A. L. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/Vescelus, F.

**NAGW 762** **University of Chicago** **2563**  
Statistical analysis of stratospheric ozone and temperature data for trends  
*Period* *Obligations*  
07/01/85-06/30/86 FY85: \$45,000 TOTAL: \$45,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tiao, G. C. HQ-EE/Smith, M. H. 31-Atmos Sci  
HQ-EE/Butler, D. M.

**NAS 2-11126** **University of Chicago** **2564**  
Pioneer 10/11 charged particle instrument data reduction and analysis  
*Period* *Obligations*  
10/01/81-09/30/85 FY85: \$374,026 TOTAL: \$1,244,066  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Simpson, J. A. ARC/Fimmel, R. O. 42-Astro Engr  
McKibben, R. B. ARC/Craig, R. A.  
Tuzzolino, A. J.

**NAS 5-24430** **University of Chicago** **2565**  
Design, develop, fabricate and testing of a scientific instrument for an experiment to measure cosmic ray isotopes  
*Period* *Obligations*  
12/01/77-07/31/86 FY85: \$103,403 TOTAL: \$2,358,664  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Simpson, J. A. GSFC/Davis, M. A. 13-Physics

**NAS 5-25731** **University of Chicago** **2566**  
Interplanetary monitoring platform-J data reduction and analysis  
*Period* *Obligations*  
12/01/79-09/30/84 FY85: TOTAL: \$514,885  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Simpson, J. A. GSFC/Wales, R. O. 11-Astronomy

**NAS 5-26680** **University of Chicago** **2567**  
International Sun-Earth Explorer cosmic ray electron experiment  
*Period* *Obligations*  
06/01/81-10/31/84 FY85: TOTAL: \$530,360  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Meyer, P. GSFC/Wales, R. O. 11-Astronomy

**NAS 5-28442** **University of Chicago** **2568**  
Provide data analysis and reduction of data from the interplanetary monitoring platform (IMP)-8  
*Period* *Obligations*  
10/01/84-09/30/85 FY85: \$96,000 TOTAL: \$96,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Simpson, J. A. GSFC/Wales, R. O. 11-Astronomy

**NAS 5-28500** **University of Chicago** **2569**  
Data reduction and analysis for ISEE/ICE spacecraft's cosmic ray electron experiment  
*Period* *Obligations*  
11/01/84-09/30/85 FY85: \$153,649 TOTAL: \$153,649  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Meyer, P. GSFC/Wales, R. O. 31-Atmos Sci

**NAS 8-32828** **University of Chicago** **2570**  
Elemental composition and energy spectra of cosmic ray nuclei  
*Period* *Obligations*  
10/28/77-10/31/86 FY85: \$966,000 TOTAL: \$10,868,103  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Myer, P. MSFC/Guynes, B. V. 31-Atmos Sci  
Muller, D. MSFC/Ise, R.

**NAS 8-34770** **University of Chicago** **2571**  
Analysis of Doppler lidar wind measurements  
*Period* *Obligations*  
05/19/82-02/19/86 FY85: TOTAL: \$69,053  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Srivastava, R. C. MSFC/Fitzjarrald, D. E. 31-Atmos Sci  
MSFC/Kaufman, J. W.

**NASW 3959** **University of Chicago** **2572**  
Participation in vega mission to measure dust particles from Halley's comet  
*Period* *Obligations*  
08/01/84-08/31/86 FY85: \$140,000 TOTAL: \$470,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Simpson, J. A. HQ-EL/Quaide, W. L. 19-Phys Sci, NEC

**NASW 4043** **University of Chicago** **2573**  
Study on the physics of PVDF detectors for dust particle measurements  
*Period* *Obligations*  
02/01/85-04/30/85 FY85: \$68,848 TOTAL: \$68,848  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Simpson, J. A. HQ-EL/Quaide, W. L. 11-Astronomy  
HQ-EL/Vescelus, F.

**NCA 2-108101** **University of Chicago** **2574**  
Numerical experiments in the formation of galaxies and clusters of galaxies  
*Period* *Obligations*  
06/02/81-04/01/84 FY85: TOTAL: \$19,788  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Miller, R. H. ARC/Smith, B. F. 11-Astronomy

**NCA 2-108201** **University of Chicago** **2575**  
Resonant grid submillimeter filters  
*Period* *Obligations*  
05/01/82-04/30/84 FY85: TOTAL: \$18,635  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hildebrand, R. H. ARC/Roellig, T. P. 11-Astronomy  
Jaffe, D. ARC/Werner, M. W.  
Dragovan, M.

**NASA'S UNIVERSITY PROGRAM**  
**ILLINOIS (Continued)**

**NCC 2-265 University of Chicago 2576**  
 Numerical experimental on the dynamics of galaxies  
*Period Obligations*  
 08/01/83-12/31/85 FY85: \$23,687 TOTAL: \$56,674  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Miller, R. H. ARC/Smith, B. F. 11-Astronomy

**NGL 14-001-001 University of Chicago 2577**  
 Investigation of effects of solar wind in interplanetary space  
*Period Obligations*  
 08/01/60-12/31/86 FY85: \$130,000 TOTAL: \$1,815,683  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Parker, E. N. HQ-EZ/Spicer, D. S. 11-Astronomy  
 HQ-EZ/Chipman, E.

**NGL 14-001-005 University of Chicago 2578**  
 High altitude balloon investigations on composition, energy spectrum and intensity of primary cosmic radiation at high and intermediate geomagnetic latitudes  
*Period Obligations*  
 05/01/61-11/30/85 FY85: \$415,000 TOTAL: \$8,320,258  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Meyer, P. HQ-EZ/Cline, T. L. 11-Astronomy  
 HQ-EZ/Kaluzienski, L. J.

**NGL 14-001-006 University of Chicago 2579**  
 Experimental and theoretical studies of energetic particles and electrodynamical processes in interplanetary space and in vicinity of planets  
*Period Obligations*  
 08/01/61-12/31/85 FY85: \$468,000 TOTAL: \$9,095,396  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Simpson, J. A. HQ-EZ/Cline, T. L. 11-Astronomy  
 HQ-EZ/Kaluzienski, L. J.

**NGL 14-001-258 University of Chicago 2580**  
 Advanced technical developments in support of scientific experiments in space  
*Period Obligations*  
 06/15/73-03/31/86 FY85: \$200,000 TOTAL: \$2,895,996  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Meyer, P. HQ-E/Rosendhal, J. D. 99-Multi-Discip  
 Muller, D. HQ-EP/Konkel, R. M.  
 Simpson, J. A.

**NGR 14-001-008 University of Chicago 2581**  
 Meteorological interpretation of satellite radiation data  
*Period Obligations*  
 09/01/70-10/31/85 FY85: \$120,000 TOTAL: \$2,025,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Fujita, T. T. HQ-EE/Dodge, J. C. 31-Atmos Sci

**NGR 14-001-147 University of Chicago 2582**  
 Interferometric high-resolution spectroscopy of optical interstellar lines  
*Period Obligations*  
 03/18/70-06/30/86 FY85: \$46,370 TOTAL: \$542,903  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hobbs, L. M. HQ-EZ/Stencel, R. E. 11-Astronomy  
 HQ-EZ/Weiler, E. J.

**NGR 14-001-227 University of Chicago 2583**  
 Photometry of galactic and extragalactic far infrared sources using the 91.5 cm airborne infrared telescope  
*Period Obligations*  
 02/27/73-10/30/85 FY85: \$210,715 TOTAL: \$1,545,033  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Harper, D. A., Jr. ARC/Haughney, L. C. 11-Astronomy

**NGT 14-020-800 University of Chicago 2584**  
 NASA graduate student researchers program  
*Period Obligations*  
 04/01/84-05/31/86 FY85: \$16,000 TOTAL: \$31,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Harper, D. A. HQ-LE/Owens, F. C. 11-Astronomy

**NGT 14-020-801 University of Chicago 2585**  
 NASA graduate student researchers program  
*Period Obligations*  
 04/15/85-06/23/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Simpson, J. A. HQ-LE/Owens, F. C. 13-Physics

**NGT 14-020-802 University of Chicago 2586**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/24/85-06/23/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wiedenbeck, M. HQ-LE/Owens, F. C. 13-Physics

**NGT 14-020-804 University of Chicago 2587**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/24/85-06/23/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Meyer, P. HQ-LE/Owens, F. C. 13-Physics

**NGT 14-020-805 University of Chicago 2588**  
 NASA graduate student researchers program  
*Period Obligations*  
 07/01/85-06/30/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Clayton, R. N. HQ-LE/Owens, F. C. 12-Chemistry

**NGT 14-020-806 University of Chicago 2589**  
 NASA graduate student researchers program  
*Period Obligations*  
 07/01/85-06/30/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Clayton, R. N. HQ-LE/Owens, F. C. 12-Chemistry

**NSG 2057 University of Chicago 2590**  
 Study of sensitive detection system for far infrared astronomy  
*Period Obligations*  
 12/01/74-10/31/85 FY85: \$97,888 TOTAL: \$700,735  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hildebrand, R. H. ARC/Haughney, L. C. 11-Astronomy



**NASA'S UNIVERSITY PROGRAM**  
**ILLINOIS (Continued)**

**NSG 7212 University of Chicago 2591**  
Nuclear astrophysics effects in meteoritic and lunar material  
*Period Obligations*  
03/01/76-11/30/84 FY85: TOTAL: \$345,246  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Schramm, D. N. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NSG 7303 University of Chicago 2592**  
Applications of electron microscopy in molecular exobiology and extraterrestrial research  
*Period Obligations*  
12/01/76-12/31/85 FY85: TOTAL: \$105,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Fernandez, H. HQ-EB/Soffen, G. A. 51-Biological Sci

**NSG 7464 University of Chicago 2593**  
Studies of the energy spectrum of cosmic ray electrons  
*Period Obligations*  
07/01/78-09/30/85 FY85: \$108,505 TOTAL: \$546,767  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Muller, D. HQ-EZ/Ormes, J. F. 31-Atmos Sci  
HQ-EZ/Opp, A. G.

**NAG 2-282 University of Illinois - Chicago Circle 2594**  
The fossil record of evolution: Data on diversification and extinction  
*Period Obligations*  
02/01/84-01/31/86 FY85: \$24,000 TOTAL: \$47,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Sepkoski, J. J., Jr. ARC/Billingham, J. 51-Biological Sci

**NAG 3-48 University of Illinois - Chicago Circle 2595**  
Synthesis and optimization of spiral bevel gear tooth surfaces  
*Period Obligations*  
03/21/80-01/29/86 FY85: \$59,999 TOTAL: \$243,663  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Litvin, F. L. LERC/Handschuh, R. F. 46-Mech Engr

**NAG 3-655 University of Illinois - Chicago Circle 2596**  
Synthesis and tooth contact analysis spar and helical gears with improved criteria  
*Period Obligations*  
10/01/85-09/30/86 FY85: \$60,000 TOTAL: \$60,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Litvin, F. L. LERC/Handschuh, R. F. 46-Mech Engr  
LERC/Coy, J. J.

**NAG 9-111 University of Illinois - Chicago Circle 2597**  
Refractory inclusions in C30 carbonaceous chondrites  
*Period Obligations*  
03/01/85-02/28/86 FY85: \$15,300 TOTAL: \$15,300  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Davis, A. M. JSC/Browne, I. D. 47-Materials Engr

**NGT 14-020-803 University of Illinois - Chicago Circle 2598**  
NASA graduate student researchers program  
*Period Obligations*  
06/14/85-06/13/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Raup, D. M. HQ-LE/Owens, F. C. 32-Geological Sci

**NAG 1-138 University of Illinois, Urbana 2599**  
Automate the management of software production systems  
*Period Obligations*  
01/21/81-01/20/86 FY85: \$95,452 TOTAL: \$406,485  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Campbell, R. H. LARC/Senn, E. H. 22-Computer Science  
Ardis, M. A. LARC/Voigt, S. J.

**NAG 1-286 University of Illinois, Urbana 2600**  
Analyses of interlaminar fracture tests and delamination in composite materials  
*Period Obligations*  
06/21/82-02/15/86 FY85: \$74,661 TOTAL: \$221,692  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wang, S. S. LARC/Johnston, N. J. 47-Materials Engr  
LARC/Murri, G. B.

**NAG 1-500 University of Illinois, Urbana 2601**  
Semiconductor superlattice photodetectors  
*Period Obligations*  
07/01/84-06/30/85 FY85: TOTAL: \$62,801  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Chuang, S. L. LARC/Clark, I. O. 13-Physics  
Coleman, J. J. LARC/Conway, E. J.  
Hess, K.

**NAG 1-508 University of Illinois, Urbana 2602**  
Measurements and experiments for testing the limitations of Fault tolerance  
*Period Obligations*  
08/21/84-08/20/85 FY85: TOTAL: \$80,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Iyer, R. K. LARC/Lupton, A. O.  
Abraham, J. A. 22-Computer Science

**NAG 1-510 University of Illinois, Urbana 2603**  
A second generation experiment in Fault tolerant software  
*Period Obligations*  
10/01/84-01/31/86 FY85: \$31,064 TOTAL: \$111,064  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Campbell, R. H. LARC/Eckhardt, D. E.  
22-Computer Science

**NAG 1-595 University of Illinois, Urbana 2604**  
Analysis of adaptive algorithms for an integrated communication network  
*Period Obligations*  
06/01/85-05/31/86 FY85: \$50,359 TOTAL: \$50,359  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Reed, D. A. LARC/Murray, N. D. 45-Elec Engr

**NAG 1-602 University of Illinois, Urbana 2605**  
Fault propagation experiments for real time systems  
*Period Obligations*  
08/21/85-08/20/86 FY85: \$130,865 TOTAL: \$130,865  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Iyer, R. K. LARC/Palumbo, D. L.  
22-Computer Science

## NASA'S UNIVERSITY PROGRAM ILLINOIS (Continued)

<b>NAG 1-613</b>	<b>University of Illinois, Urbana</b>	<b>2606</b>
<b>Aerospace computing research and technology</b>		
<i>Period</i>	<i>Obligations</i>	
<b>08/21/85-08/20/86</b>	<b>FY85: \$400,045</b>	<b>TOTAL: \$400,045</b>
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
<b>Gear, C. W.</b>	<b>LARC/Voigt, S. J.</b>	<b>22-Computer Science</b>

<b>NAG 2-308</b>	<b>University of Illinois, Urbana</b>	<b>2607</b>
<b>Human performance and workload in automated systems</b>		
<i>Period</i>	<i>Obligations</i>	
08/01/84-09/30/86	FY85: \$127,140	TOTAL: \$142,140
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wickens, C. D.	ARC/Hart, S. G.	69-Psych, NEC

<b>NAG 2-347</b>	<b>University of Illinois, Urbana</b>	<b>2608</b>
Computer simulation of optimal aircraft flight paths		
<i>Period</i>	<i>Obligations</i>	
03/01/85-05/31/85	FY85: \$4,490	TOTAL: \$4,490
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Prussing, J. E.	ARC/Duke, E. L.	41-Aero Engr
	ARC/Petersen, K. L.	

<b>NAG 3-325</b>	<b>University of Illinois, Urbana</b>	<b>2609</b>
A study of reductions of Cr in Ni-base superalloys through element substitution and rapid solidification processing		
<i>Period</i>	<i>Obligations</i>	
09/15/82-03/13/86	FY85: \$49,787	TOTAL: \$159,977
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fraser, H. L.	LERC/Dreshfield, R. L. 47-Materials Engr	
Mudd, B. C.		

NAG 3-418		University of Illinois, Urbana	2610
Study of microstrip antenna arrays and related problems			
Period	Obligations		
05/21/83-04/20/86	FY85: \$65,988	TOTAL: \$154,165	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Lo, Y. T.	LERC/Lee, R. Q.	45-Elec Engr	

<b>NAG 3-419</b>	<b>University of Illinois, Urbana</b>	<b>2611</b>
Selected studies of reflector antenna systems		
<i>Period</i>	<i>Obligations</i>	
05/21/83-12/19/85	FY85: \$52,799	TOTAL: \$129,639
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lee, S. W.	LERC/Acosta, R. J.	45-ELEC Engr

<b>NAG 3-420</b>	<b>University of Illinois, Urbana</b>	<b>2612</b>
Investigation of monolithic microwave integrated circuit modules radiators for 20-30GHz and above		
<i>Period</i>	<i>Obligations</i>	
05/21/83-08/20/84	FY85:	TOTAL: \$60,005
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mittra, R.	LERC/Smetana, J.	45-Elec Engr

<b>NAG 3-465</b>	<b>University of Illinois, Urbana</b>	<b>2613</b>
<b>Multiaxial cyclic deformation and fatigue</b>		
<i>Period</i>	<i>Obligations</i>	
08/20/83-12/18/85	FY85: \$70,135	TOTAL: \$155,180
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Socie, D. F.	LERC/Leese, G. E.	47-Materials Engr
	LERC/Halford, G. R.	

<b>NAG 3-475</b>	<b>University of Illinois, Urbana</b>	<b>2614</b>
<b>Numerical methods for analyzing electromagnetic scattering</b>		
<i>Period</i>	<i>Obligations</i>	
09/25/83-11/23/85	FY85: \$80,008	TOTAL: \$154,993
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lee, S. W.	LERC/Cho, Y. C.	45-Elec Engr

<b>NAG 3-495</b>	<b>University of Illinois, Urbana</b>	<b>2615</b>
Hafnia rich mixed oxide ceramics of the system HPO <sub>2</sub> ZRO <sub>2</sub> Ti O <sub>2</sub> for heaters and heat exchangers in electrothermal thrusters		
<i>Period</i>	<i>Obligations</i>	
12/01/83-11/29/85	FY85: \$62,500	TOTAL: \$93,012
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brown, S. D.	LERC/Marinovs, C.	47-Materials Engr

<b>NAG 3-507</b>	<b>University of Illinois, Urbana</b>	<b>2616</b>
Superlattices and nipi structures in new forms of cascade solar cells		
<i>Period</i>	<i>Obligations</i>	
01/20/84-04/23/86	FY85: \$69,998	TOTAL: \$139,028
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Leburton, J. P.	LERC/Godlewski, M. P.	45-Elec Engr
Hess, K.	LERC/Brinker, D. J.	
Holonyak, N.		

<b>NAG 3-591</b>	<b>University of Illinois, Urbana</b>	<b>2617</b>
Investigation of polycrystalline vanadium oxide films deposited by magnetron reactive sputtering and their application to thermal control surface for space power systems		
<i>Period</i>	<i>Obligations</i>	
12/10/84-12/09/85	FY85: \$51,178	TOTAL: \$51,178
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Thornton, J.	LERC/Mirtch, M. J.	13-Physics
	LERC/Banks, B. A.	

<b>NAG 3-613</b>	<b>University of Illinois, Urbana</b>	<b>2618</b>
Electron transport in new material quantum well structures for microwave devices		
<i>Period</i>	<i>Obligations</i>	
04/30/85-11/30/85	FY85: \$55,524	TOTAL: \$55,524
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Morkoc, H.	LERC/Alterovitz, S. A.	45-Elec Engr

<b>NAG 5-171</b>	<b>University of Illinois, Urbana</b>	<b>2619</b>
<b>Observation of central stars of large planetary nebulae</b>		
<i>Period</i>	<i>Obligations</i>	
05/01/81-07/31/86	FY85:	TOTAL: \$34,831
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kaler, J. B.	GSFC/Kondo, Y.	11-Astronomy
Feibelman, W. A.		

<b>NAG 5-362</b>	<b>University of Illinois, Urbana</b>	<b>2620</b>
High star formation ratio irregular galaxies and the initial mass function of massive stars		
<i>Period</i>	<i>Obligations</i>	
08/15/83-08/14/84	FY85:	TOTAL: \$10,488
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gallagher, J. S.	GSFC/Kondo, Y.	11-Astronomy
Hunter, D. A.		
Lamb, S. A.		

**NASA'S UNIVERSITY PROGRAM**  
**ILLINOIS (Continued)**

**NAG 5-377**                      **University of Illinois, Urbana**                      **2621**  
 Design of high performance reconfigurable systems  
*Period*    *Obligations*  
 10/15/83-08/31/87                      FY85: \$110,544                      TOTAL: \$158,544  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
 Evenson, P.                                      GSFC/Iobst, K. W. 22-Computer Science

**NAS 9-15328**                      **University of Illinois, Urbana**                      **2628**  
 Definition of Spacelab I experiment on effects of prolonged weightlessness on the humoral response in humans  
*Period*    *Obligations*  
 07/15/77-12/31/84                      FY85:                      TOTAL: \$68,568  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
 Voss, E. W.                                      JSC/Peck, E. E.                      59-Life Sci, NEC

**NAG 5-404**                      **University of Illinois, Urbana**                      **2622**  
 A comparison of star formation characteristics in different types of irregular galaxies  
*Period*    *Obligations*  
 06/01/84-02/28/86                      FY85: \$5,000                      TOTAL: \$17,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
 Lamb, S. A.                                      GSFC/Kondo, Y.                      11-Astronomy  
 Gallagher, J. S.  
 Hunter, D. A.

**NASW 3805**                      **University of Illinois, Urbana**                      **2629**  
 Support for middle atmosphere program management  
*Period*    *Obligations*  
 09/26/83-05/20/84                      FY85:                      TOTAL: \$25,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
 Liu, C. H.                                      HQ-EE/Hilsenrath, E.                      13-Physics  
 HQ-EE/Watson, R. T.

**NAG 8-476**                      **University of Illinois, Urbana**                      **2623**  
 Comparative X-ray and radio studies of Cas A Tycho's SNR, and Kepler's SNR  
*Period*    *Obligations*  
 06/11/84-06/10/85                      FY85:                      TOTAL: \$11,556  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
 Dickel, J. R.                                      MSFC/Johnson, W. G.                      11-Astronomy

**NAS10-11153**                      **University of Illinois, Urbana**                      **2630**  
 Study of liquid vapor  
*Period*    *Obligations*  
 02/05/85-02/05/86                      FY85: \$90,375                      TOTAL: \$90,375  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
 Chao, B. T.                                      KSC/Lin, F. N.                      39-Env Sci, NEC  
 Soo, S. L.

**NAG 8-540**                      **University of Illinois, Urbana**                      **2624**  
 Evaluate the X-ray and radio emission mechanisms in the young remnants of Tycho's and Kepler's supernovae  
*Period*    *Obligations*  
 08/01/85-07/31/86                      FY85: \$7,000                      TOTAL: \$7,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
 Dickel, J. R.                                      MSFC/Johnson, W. G.                      11-Astronomy

**NCA 2-330401**                      **University of Illinois, Urbana**                      **2631**  
 Decomposition of turbulent fields  
*Period*    *Obligations*  
 01/15/84-01/14/86                      FY85: \$39,969                      TOTAL: \$79,910  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
 Adrian, R. J.                                      ARC/Moin, P.                      41-Aero Engr  
 Stewart, D. S.

**NAS 5-26405**                      **University of Illinois, Urbana**                      **2625**  
 Design and application of parallel processors  
*Period*    *Obligations*  
 12/12/80-04/12/86                      FY85: \$120,573                      TOTAL: \$497,298  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
 Slotnick, D. L.                                      GSFC/Schaefer, D. H.                      22-Computer Science

**NCC 3-35**                      **University of Illinois, Urbana**                      **2632**  
 Effect on gravity on a lean limit flame  
*Period*    *Obligations*  
 11/25/83-12/23/85                      FY85: \$42,000                      TOTAL: \$85,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
 Strehlow, R. A.                                      LERC/Sacksteder, K. R.                      46-Mech Engr

**NAS 5-28781**                      **University of Illinois, Urbana**                      **2626**  
 Interpreting forest and grassland biome productivity utilizing nested scales of image resolution and biogeographical analysis  
*Period*    *Obligations*  
 08/09/85-12/08/87                      FY85: \$199,994                      TOTAL: \$199,994  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
 Iverson, L.                                      GSFC/Oseroff, H.                      32-Geological Sci

**NCC 3-38**                      **University of Illinois, Urbana**                      **2633**  
 Investigation of monolithic microwave integrated circuit modules and radiators for 20-30 GHz and above  
*Period*    *Obligations*  
 05/21/84-12/20/85                      FY85: \$68,905                      TOTAL: \$109,466  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
 Mittra, R.                                      LERC/Smetana, J.                      45-Elec Engr

**NAS 8-34902**                      **University of Illinois, Urbana**                      **2627**  
 Application of satellite data in variational objective analysis  
*Period*    *Obligations*  
 08/27/82-08/27/85                      FY85:                      TOTAL: \$364,081  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
 Achtemeier, G.                                      MSFC/Fichtl, G. H.                      31-Atmos Sci  
 MSFC/Kaufman, J.

**NGR 14-005-181**                      **University of Illinois, Urbana**                      **2634**  
 Rocket studies of the lower ionosphere  
*Period*    *Obligations*  
 08/01/71-10/31/85                      FY85: \$250,000                      TOTAL: \$5,784,817  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
 Walker, A. B.                                      GSFC/Early, L. J.                      19-Phys Sci, NEC  
 GSFC/Pless, R. H.

# **NASA'S UNIVERSITY PROGRAM** **ILLINOIS (Continued)**

**NSG 1471**                      **University of Illinois, Urbana**                      **2635**  
A project to investigate mechanisms and methodologies for the design and construction of reliable, distributed programs in real-time environments

Period	Obligations	
11/15/77-10/31/85	FY85: \$69,007	TOTAL: \$559,843
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Campbell, R. H.	LARC/Murray, N. D.	21-Mathematics
	LARC/Will, R. W.	

**NSG 5049**                      **University of Illinois, Urbana**                      **2636**  
Effects of atmospheric refraction and turbulence on the accuracy of laser systems

Period	Obligations	
02/01/75-06/30/86	FY85: \$59,669	TOTAL: \$455,769
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gardner, C. S.	GSFC/Abshire, J. B.	45-Elec Engr
Swenson, G. W.	GSFC/Degnan, J. J.	

**NSG 7044**                      **University of Illinois, Urbana**                      **2637**  
Evolution of the cell and the translation process

Period	Obligations	
06/01/74-12/31/85	FY85: \$106,910	TOTAL: \$824,730
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Woese, C. R.	HQ-EB/Devincenzi, D. L.	12-Chemistry
	HQ-EB/Averner, M.	

**NSG 7506**                      **University of Illinois, Urbana**                      **2638**  
Studies of upper-atmosphere motions by UHF

Period	Obligations	
10/01/78-11/30/85	FY85: \$99,996	TOTAL: \$654,494
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bowhill, S. A.	HQ-EE/Hampson, R. F.	31-Atmos Sci
	HQ-EE/Demore, W. B.	

**NSG 7653**                      **University of Illinois, Urbana**                      **2639**  
Fundamental studies in theoretical X-ray astronomy

Period	Obligations	
09/01/79-10/31/85	FY85: \$105,000	TOTAL: \$690,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lamb, F. K.	HQ-EZ/Kaluzienski, L.	11-Astronomy
Pethick, C. J.	HQ-EZ/Ormes, J. F.	
Pines, D.		

## **INDIANA**

**NAG 1-584**                      **Indiana University - Bloomington**                      **2640**  
Characterize response uniformity of track etch detectors for the heavy nuclei collector (HNC) experiment on long duration exposure facility (LDEF)-2

Period	Obligations	
05/01/85-08/31/86	FY85: \$15,000	TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ahlen, S. P.	LARC/O'neal, R. L.	13-Physics
	LARC/Kinard, W. H.	

**NAG 2-323**                      **Indiana University - Bloomington**                      **2641**  
Gravity perturbations as a probe for analyzing pattern specification in early amphibian embryogenesis

Period	Obligations	
12/01/84-11/30/85	FY85: \$50,000	TOTAL: \$50,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Malacinski, G. M.	ARC/Souza, K. A.	51-Biological Sci
	ARC/Oyama, J.	

**NAG 5-182**                      **Indiana University - Bloomington**                      **2642**  
Studies of the ultraviolet spectra of carbon stars

Period	Obligations	
05/15/81-02/28/86	FY85: \$28,800	TOTAL: \$77,419
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Johnson, H. R.	GSFC/Kondo, Y.	11-Astronomy
Baumert, J.		

**NAG 5-198**                      **Indiana University - Bloomington**                      **2643**  
Quasi-simultaneous synoptic observations of selected objects in several wave-length regions

Period	Obligations	
08/01/81-10/31/85	FY85:	TOTAL: \$16,350
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mufson, S. L.	GSFC/Kondo, Y.	11-Astronomy
Urry, C. M.		

**NAG 5-347**                      **Indiana University - Bloomington**                      **2644**  
A study of the ultraviolet spectra of selected cool giant stars

Period	Obligations	
07/15/83-08/14/85	FY85:	TOTAL: \$12,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Honeycutt, R. K.	GSFC/Kondo, Y.	11-Astronomy
Steiman-cameron, T. Y.		

**NAG 5-431**                      **Indiana University - Bloomington**                      **2645**  
Non-radiative heating in stellar atmospheres: The gravity and limb darkening of selected binaries

Period	Obligations	
08/01/84-08/31/85	FY85: \$6,318	TOTAL: \$12,464
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Eaton, J. A.	GSFC/Kondo, Y.	11-Astronomy

**NAG 5-599**                      **Indiana University - Bloomington**                      **2646**  
Ultraviolet observations of astronomical sources

Period	Obligations	
09/01/85-02/28/86	FY85: \$19,600	TOTAL: \$19,600
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Eaton, J.	GSFC/Kondo, Y.	11-Astronomy
Johnson, H. R.		

**NAG 8-472**                      **Indiana University - Bloomington**                      **2647**  
X-ray and radio properties of the adolescent supernova remnants IC 443 and W44

Period	Obligations	
05/28/84-05/31/86	FY85:	TOTAL: \$17,644
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mufson, S. L.	MSFC/Johnson, W. G.	11-Astronomy
McCollough, M.		

# **NASA'S UNIVERSITY PROGRAM** **INDIANA (Continued)**

**NAGW 60** **Indiana University - Bloomington** **2648**  
The role of gravity perception in the establishment of the dorsal ventral axis of the amphibian egg

Period	Obligations	
06/01/80-05/31/85	FY85: TOTAL: \$265,433	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Malacinski, G. M.	HQ-EB/Halstead, T. W.	51-Biological Sci

**NCA 2-335401** **Indiana University - Bloomington** **2649**  
Matter and angular momentum transport in Saturn's rings due to particle erosion mechanisms

Period	Obligations	
01/01/84-12/31/85	FY85: \$5,240 TOTAL: \$13,240	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Durisen, R. H.	ARC/Cuzzi, J. N.	11-Astronomy

**NCA 2-335402** **Indiana University - Bloomington** **2650**  
Atmospheres of red giant stars

Period	Obligations	
06/01/84-05/31/86	FY85: TOTAL: \$5,462	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Johnson, H. R.	ARC/Augason, G. C.	11-Astronomy
Alexander, D. R.		

**NGR 15-003-118** **Indiana University - Bloomington** **2651**  
Application of ultra-high sensitivity isotope ratio mass spectrometry to organic geochemistry and cosmochemistry

Period	Obligations	
06/20/72-11/30/85	FY85: \$104,000 TOTAL: \$1,089,570	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hayes, J. M.	HQ-EB/Devincenzi, D. L.	12-Chemistry
	HQ-EB/Rambler, M. B.	

**NSG 9077** **Indiana University - Bloomington** **2652**  
Characterization and evolution of Apollo 15 drill core soils, and the origin of green glass vitrophyres

Period	Obligations	
07/15/79-02/28/86	FY85: \$14,935 TOTAL: \$175,335	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Basu, A.	JSC/Browne, I. D.	32-Geological Sci

**NAG 3-528** **Indiana Univ.-Purdue U. at Indianapolis** **2653**  
3-D boundary layers in internal flows

Period	Obligations	
03/15/84-03/13/86	FY85: \$49,400 TOTAL: \$96,900	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bodonyi, R. J.	LERC/Kao, H. C.	41-Aero Engr

**NAG 1-58** **Purdue University** **2654**  
A study of method to predict and measure the transmission of sound through the walls of light aircraft

Period	Obligations	
04/01/80-09/30/85	FY85: \$81,073 TOTAL: \$480,849	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bernhard, R. J.	LARC/Mixon, J. S.	41-Aero Engr

**NAG 1-116** **Purdue University** **2655**  
Multiple level techniques for computational fluid dynamics

Period	Obligations	
11/12/80-09/30/84	FY85: TOTAL: \$105,798	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McCarthy, D. R.	LARC/Swanson, R. C.	41-Aero Engr
	LARC/Thames, F. C.	

**NAG 1-157** **Purdue University** **2656**  
Interactive aircraft flight control and aeroelastic stabilization

Period	Obligations	
05/01/81-10/31/85	FY85: \$55,367 TOTAL: \$226,888	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Weisshaar, T. A.	LARC/Perry, B.	41-Aero Engr
Schmidt, D. K.		

**NAG 1-222** **Purdue University** **2657**  
Modeling of contact behavior and damage in low velocity impact of composite laminates under initial stress

Period	Obligations	
11/01/81-12/31/84	FY85: TOTAL: \$150,038	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sun, C. T.	LARC/Tilg, W.	19-Phys Sci, NEC
	LARC/Kennedy, J. M.	

**NAG 1-231** **Purdue University** **2658**  
Constraint effects on fatigue crack propagation

Period	Obligations	
01/01/82-12/31/85	FY85: TOTAL: \$108,873	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hillberry, B. M.	LARC/Johnson, W. S.	46-Mech Engr
	LARC/Newman, J. C., Jr.	

**NAG 1-254** **Purdue University** **2659**  
Enhanced manual controllability via active control of aeroelastic vehicles

Period	Obligations	
02/01/82-02/28/86	FY85: \$39,000 TOTAL: \$180,352	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schmidt, D. K.	LARC/Grantham, W. D.	41-Aero Engr
Yang, H. T.	LARC/Elliott, J. R.	

**NAG 1-305** **Purdue University** **2660**  
Dynamics and control of forward-swept-wing aircraft

Period	Obligations	
11/01/82-12/31/83	FY85: TOTAL: \$38,920	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schmidt, D. K.	LARC/Newsom, J. R.	41-Aero Engr
Weisshaar, T. A.		

**NAG 1-321** **Purdue University** **2661**  
Three-dimensional measurements of fatigue crack closure

Period	Obligations	
01/01/83-06/30/84	FY85: TOTAL: \$40,061	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Grandt, A. F., Jr.	LARC/Newman, J. C., Jr.	47-Materials Engr
	LARC/Davidson, J. R.	

**NASA'S UNIVERSITY PROGRAM**  
**INDIANA (Continued)**

**NAG 1-372** **Purdue University** **2662**  
Computational unsteady aerodynamics and aeroelasticity  
*Period* *Obligations*  
06/07/83-05/31/86 FY85: TOTAL: \$153,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Yang, H. T. LARC/Edwards, J. W. 41-Aero Engr  
LARC/Bennett, R. M.

**NAG 3-59** **Purdue University** **2669**  
Cobalt in nickel base superalloys  
*Period* *Obligations*  
05/01/80-02/28/85 FY85: TOTAL: \$170,896  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Radavich, J. F. LERC/Scheuermann, C. M.  
47-Materials Engr

**NAG 1-468** **Purdue University** **2663**  
Reduced controllers for the spacecraft control laboratory experiment scale  
*Period* *Obligations*  
06/01/84-05/31/86 FY85: \$36,750 TOTAL: \$58,750  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Skelton, R. E. LARC/Williams, J. P. 42-Astro Engr  
LARC/Montgomery, R. C.

**NAG 3-62** **Purdue University** **2670**  
Water droplet dynamics in annular cascade  
*Period* *Obligations*  
04/15/80-09/30/85 FY85: TOTAL: \$379,180  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Murthy, S. N. LERC/Steinke, R. J. 41-Aero Engr

**NAG 1-502** **Purdue University** **2664**  
Algorithm development for unsteady transonic flow calculations  
*Period* *Obligations*  
07/01/84-12/31/85 FY85: TOTAL: \$26,348  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Williams, M. H. LARC/Batina, J. T. 41-Aero Engr

**NAG 3-211** **Purdue University** **2671**  
Dynamic delamination crack propagation in composite laminates  
*Period* *Obligations*  
12/15/81-06/30/85 FY85: TOTAL: \$90,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sun, C. T. LERC/Chamis, C. C. 41-Aero Engr  
LERC/Irvine, T. B.

**NAG 1-552** **Purdue University** **2665**  
First international satellite cloud climatology project regional experiment (FIRE) related study  
*Period* *Obligations*  
12/14/84-12/13/85 FY85: \$25,000 TOTAL: \$25,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Davies, R. LARC/McDougal, D. S. 31-Atmos Sci  
LARC/Suttles, J. T.

**NAG 3-226** **Purdue University** **2672**  
Spontaneous ignition characteristics of hydrocarbon fuel/air mixtures  
*Period* *Obligations*  
11/15/81-05/13/85 FY85: TOTAL: \$185,204  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lefebvre, A. H. LERC/Tacina, R. R. 41-Aero Engr  
Rizk, N. K.

**NAG 1-581** **Purdue University** **2666**  
Structural analysis using a multiprocessor computer  
*Period* *Obligations*  
04/01/85-12/31/85 FY85: \$79,995 TOTAL: \$79,995  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sun, C. T. LARC/Stroud, W. J. 49-Engr, NEC  
Mehrotra, P.

**NAG 3-281** **Purdue University** **2673**  
Analysis of film cooling of supersonic turbojet engine noseles  
*Period* *Obligations*  
05/01/82-12/31/85 FY85: TOTAL: \$145,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Murthy, S. N. LERC/Straight, D. M. 46-Mech Engr  
LERC/Papell, S. S.

**NAG 2-228** **Purdue University** **2667**  
Pilot-in-the-loop quadratic synthesis of flight director control laws  
*Period* *Obligations*  
04/01/83-11/30/84 FY85: TOTAL: \$37,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schmidt, D. K. ARC/Duke, E. L. 41-Aero Engr  
ARC/Petersen, K. L.

**NAG 3-351** **Purdue University** **2674**  
Saturated laser fluorescence in turbulent sooting flames at high pressure  
*Period* *Obligations*  
10/30/82-09/30/86 FY85: \$69,429 TOTAL: \$206,798  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Laurendeau, N. M. LERC/Lyons, V. J. 46-Mech Engr  
King, G. B.

**NAG 2-330** **Purdue University** **2668**  
Investigation of the mode of compensation of Venus topography  
*Period* *Obligations*  
01/01/85-12/31/85 FY85: \$24,993 TOTAL: \$24,993  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Morgan, P. ARC/Fimmel, R. O. 11-Astronomy  
ARC/Craig, R. A.

**NAG 3-360** **Purdue University** **2675**  
The role of hydroxyl radical in the chemistry of soot formation  
*Period* *Obligations*  
12/15/82-12/30/86 FY85: \$20,000 TOTAL: \$191,750  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Laurendeau, N. M. LERC/Lezberg, E. 12-Chemistry  
King, G. B. LERC/Haggard, J.

# **NASA'S UNIVERSITY PROGRAM** **INDIANA (Continued)**

**NAG 3-412** **Purdue University** **2676**  
Aerodynamic mistuning of a bladed disk  
*Period* *Obligations*  
04/15/83-07/12/86 FY85: \$17,106 TOTAL: \$122,342  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fleeter, S. LERC/Hoyniak, D. 41-Aero Engr

**NAG 3-433** **Purdue University** **2677**  
Solar energy conversion thru the interaction of plasmons with tunnel junctions  
*Period* *Obligations*  
06/01/83-02/27/86 FY85: \$53,771 TOTAL: \$122,310  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schwartz, R. J. LERC/Arrison, A. 19-Phys Sci, NEC  
Datta, S.

**NAG 3-481** **Purdue University** **2678**  
Dynamic performance of high bypass ratio turbine engines with water ingestion  
*Period* *Obligations*  
10/31/83-08/31/86 FY85: \$59,690 TOTAL: \$203,116  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Murthy, S. N. LERC/Steinke, R. J. 41-Aero Engr

**NAG 3-496** **Purdue University** **2679**  
Study of electron emission and arc discharges  
*Period* *Obligations*  
12/01/83-11/29/85 FY85: \$33,500 TOTAL: \$63,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Reifenberger, R. LERC/Curran, F. 13-Physics

**NAG 3-499** **Purdue University** **2680**  
Aeroelasticity of advanced turboprops using three dimensional unsteady aerodynamics  
*Period* *Obligations*  
12/15/83-02/14/86 FY85: \$52,599 TOTAL: \$100,876  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Williams, M. H. LERC/Kaza, K. V. 41-Aero Engr  
LERC/Brown, G. V.

**NAG 3-502** **Purdue University** **2681**  
Turbulence characteristics of an axisymmetric reacting flow  
*Period* *Obligations*  
12/21/83-02/04/86 FY85: \$21,390 TOTAL: \$50,948  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stevenson, W. H. LERC/Van Overbeke, T. 46-Mech Engr  
Thompson, H. D.

**NAG 3-552** **Purdue University** **2682**  
Influence of fuel thermal stability on atomizer design and performance  
*Period* *Obligations*  
09/15/84-11/14/85 FY85: TOTAL: \$77,517  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lefebvre, A. F. LERC/Rivera, J. C. 46-Mech Engr  
LERC/Roubuhler, R. J.

**NAG 3-586** **Purdue University** **2683**  
Photo reductions of metal ions mediated by 15 electron ml m=ni, pa, pt. Radicals  
*Period* *Obligations*  
11/05/84-11/04/85 FY85: \$30,000 TOTAL: \$30,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kubiak, C. P. LERC/Hepp, A. 12-Chemistry

**NAG 3-592** **Purdue University** **2684**  
Modelling of turbulent transport and production in a reacting mixing layer  
*Period* *Obligations*  
01/02/85-12/31/85 FY85: \$35,960 TOTAL: \$35,960  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Murthy, S. N. LERC/Overbeke, T. V. 41-Aero Engr

**NAG 3-599** **Purdue University** **2685**  
A predictive model for failure properties of thermoset resins  
*Period* *Obligations*  
01/05/85-01/03/88 FY85: \$135,575 TOTAL: \$135,575  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Caruthers, J. M. LERC/Bowles, K. A. 47-Materials Engr

**NAG 3-657** **Purdue University** **2686**  
2-D computer simulation of bilateral silicon solar cells  
*Period* *Obligations*  
10/01/85-09/30/86 FY85: \$39,735 TOTAL: \$39,735  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gray, J. L. LERC/Sater, B. L. 45-Elec Engr  
LERC/Labus, T. L.

**NAG 4-1** **Purdue University** **2687**  
The integrated manual and automatic control of complex flight vehicles  
*Period* *Obligations*  
01/01/80-12/31/85 FY85: \$30,000 TOTAL: \$280,921  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schmidt, D. K. ARC/Berry, D. T. 41-Aero Engr  
DPRF/Powers, B. G.

**NAG 5-101** **Purdue University** **2688**  
Study the effect of cloud inhomogeneity on the Earth radiation budget  
*Period* *Obligations*  
09/01/80-01/31/86 FY85: \$38,000 TOTAL: \$162,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Davies, R. GSFC/Curran, R. J. 31-Atmos Sci  
GSFC/King, M. D.

**NAG 5-231** **Purdue University** **2689**  
Geoid height and the thickness of the lithosphere  
*Period* *Obligations*  
05/01/82-06/30/84 FY85: TOTAL: \$22,643  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Crough, S. T. GSFC/Kouns, C. W. 32-Geological Sci  
GSFC/McAdoo, D. C.

**NASA'S UNIVERSITY PROGRAM**  
**INDIANA (Continued)**

**NAG 5-269** **Purdue University** **2690**  
Measurement and modeling of the optical scattering properties of crop canopies  
*Period* *Obligations*  
09/01/82-11/30/85 FY85: \$10,000 TOTAL: \$258,003  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Vanderbilt, V. C. GSFC/Deering, D. W. 55-Agriculture Sci

**NAG 5-304** **Purdue University** **2691**  
Improving the geological interpretation of magnetic and gravity satellite anomalies  
*Period* *Obligations*  
04/01/83-06/30/85 FY85: TOTAL: \$74,999  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hinze, W. J. GSFC/Kouns, C. W. 32-Geological Sci  
Braile, L. W. GSFC/Langel, R. A.

**NAG 9-48** **Purdue University** **2692**  
Chemical studies of meteorites  
*Period* *Obligations*  
03/01/83-03/01/86 FY85: \$48,200 TOTAL: \$124,700  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lipschutz, M. E. JSC/Browne, I. D. 12-Chemistry

**NAG 9-97** **Purdue University** **2693**  
Heat production in Archean rocks  
*Period* *Obligations*  
03/01/85-03/01/86 FY85: \$9,000 TOTAL: \$9,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Morgan, P. JSC/Phinney, W. C. 32-Geological Sci

**NAGW 513** **Purdue University** **2694**  
The potential of automation and robotics and artificial intelligence in the development of a permanent presence in space  
*Period* *Obligations*  
10/17/83-06/30/84 FY85: TOTAL: \$19,822  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Williams, T. J. HQ-MF/Shealau, J. P. 42-Astro Engr  
HQ-MF/Guha, A. K.

**NAGW 736** **Purdue University** **2695**  
Improving the geological interpretations of magnetic and gravity satellite anomalies  
*Period* *Obligations*  
04/01/85-03/31/86 FY85: \$47,645 TOTAL: \$47,645  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hinze, W. J. HQ-EE/Kitcho, C. A. 32-Geological Sci  
HQ-EE/Murphy, R. E.

**NAGW 799** **Purdue University** **2696**  
Characterization of vegetation by microwave and optical remote sensing  
*Period* *Obligations*  
08/01/85-02/28/86 FY85: \$100,000 TOTAL: \$100,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Daughtry, C. S. HQ-/Tuyahov, A. J. 39-Env Sci, NEC

**NAG10-18** **Purdue University** **2697**  
Study of plants growth  
*Period* *Obligations*  
02/04/85-02/04/86 FY85: \$50,499 TOTAL: \$50,499  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mitchell, C. A. KSC/Knott, W. M. 55-Agriculture Sci

**NAS 5-26859** **Purdue University** **2698**  
LANDSAT-4 image data quality analyses  
*Period* *Obligations*  
08/09/82-08/09/85 FY85: TOTAL: \$255,866  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Anuta, P. E. GSFC/Oseroff, H. 49-Engr, NEC

**NAS 8-34009** **Purdue University** **2699**  
Utilization of satellite cloud information to diagnose the energy state and transformations in extratropical cyclones  
*Period* *Obligations*  
06/01/81-05/31/87 FY85: \$153,293 TOTAL: \$316,264  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Smith, P. J. MSFC/Fichtl, G. H. 31-Atmos Sci  
MSFC/Kaufman, J.

**NAS 8-34303** **Purdue University** **2700**  
Investigation of the thermophysical properties of PbSnTe and HgCdTe  
*Period* *Obligations*  
03/01/81-12/31/85 FY85: TOTAL: \$41,430  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Paciesas, W. S. MSFC/Yates, I. C. 45-Elec Engr  
MSFC/Williams, J. R.

**NAS 8-35187** **Purdue University** **2701**  
Dynamics and energetics of the South Pacific convergence zone during FGGE SOP-1  
*Period* *Obligations*  
10/12/83-10/11/86 FY85: \$55,979 TOTAL: \$154,568  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Vincent, D. G. MSFC/Kaufman, J. W. 31-Atmos Sci  
MSFC/Fichtl, G. H.

**NAS 9-16528** **Purdue University** **2702**  
Remote sensing of agriculture, Earth resources, and man's environment  
*Period* *Obligations*  
12/01/81-12/31/85 FY85: \$135,000 TOTAL: \$1,955,400  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Daughtry, C. JSC/Browne, I. D. 39-Env Sci, NEC

**NCA 2-7** **Purdue University** **2703**  
Real time comparison of X 29A flight data and simulation data  
*Period* *Obligations*  
11/01/84-12/31/85 FY85: \$16,379 TOTAL: \$16,379  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Andrisani, D. ARC/Gera, J. 41-Aero Engr



# **NASA'S UNIVERSITY PROGRAM** **INDIANA (Continued)**

**NCA 2-605201** **Purdue University** **2704**  
Three dimensional transonic aerodynamic calculations  
*Period* *Obligations*  
06/01/82-05/31/84 FY85: TOTAL: \$30,220  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Yang, H. T. ARC/Goorjian, P. 41-Aero Engr

**NCC 2-100** **Purdue University** **2705**  
Higher plant species selection criteria for a closed ecological life support system: Photosynthetic and nutritional aspects  
*Period* *Obligations*  
09/01/80-08/31/86 FY85: \$81,731 TOTAL: \$478,765  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mitchell, C. A. ARC/MacElroy, R. D. 55-Agriculture Sci

**NCC 2-235** **Purdue University** **2706**  
Objective measures of pilot workload  
*Period* *Obligations*  
01/01/83-02/28/85 FY85: TOTAL: \$43,384  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kantowitz, B. H. ARC/Hart, S. G. 99-Multi-Discip

**NCC 2-243** **Purdue University** **2707**  
Flight dynamics, controls, and displays of tilt rotor aircraft  
*Period* *Obligations*  
06/01/83-10/31/85 FY85: \$20,000 TOTAL: \$58,679  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schmidt, D. K. ARC/Franklin, J. A. 41-Aero Engr

**NCC 2-245** **Purdue University** **2708**  
Manual control and man-vehicle integration  
*Period* *Obligations*  
01/01/83-07/31/85 FY85: \$15,000 TOTAL: \$63,754  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schmidt, D. K. ARC/Hartzell, E. J. 69-Psych, NEC

**NCC 2-288** **Purdue University** **2709**  
Multi-input multi-output system control for experimental aircraft  
*Period* *Obligations*  
01/01/84-03/31/86 FY85: TOTAL: \$39,800  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schmidt, D. K. ARC/Duke, E. L. 41-Aero Engr  
Kozel, D. ARC/Petersen, K. L.

**NCC 2-289** **Purdue University** **2710**  
Model reduction for control design  
*Period* *Obligations*  
12/01/83-08/31/85 FY85: TOTAL: \$23,877  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dunipace, K. R. ARC/Duke, E. L. 41-Aero Engr  
ARC/Petersen, K. L.

**NCC 2-349** **Purdue University** **2711**  
Timesharing performance as an indicator of pilot mental workload  
*Period* *Obligations*  
01/01/85-12/31/85 FY85: \$20,003 TOTAL: \$20,003  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kantowitz, B. H. ARC/Hart, S. G. 69-Psych, NEC

**NCC 2-367** **Purdue University** **2712**  
Research on handling qualities of VTOL vehicles  
*Period* *Obligations*  
07/01/85-10/31/85 FY85: \$7,500 TOTAL: \$7,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Andrisani, D., II ARC/Lebacqz, J. V. 41-Aero Engr

**NGT 15-004-800** **Purdue University** **2713**  
NASA graduate student researchers program  
*Period* *Obligations*  
04/15/85-04/14/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mitchell, C. A. HQ-LE/Owens, F. C. 39-Env Sci, NEC

**NSG 3135** **Purdue University** **2714**  
Aerodynamics parameters affecting turbopropeller performance  
*Period* *Obligations*  
01/15/77-11/24/85 FY85: \$101,009 TOTAL: \$839,659  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sullivan, J. P. LERC/Mitchell, G. A. 41-Aero Engr

**NSG 3285** **Purdue University** **2715**  
Three-dimensional aerodynamic turbomachines  
*Period* *Obligations*  
07/01/79-11/26/85 FY85: \$65,000 TOTAL: \$633,124  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fleeter, S. LERC/Boldman, D. R. 41-Aero Engr

**NSG 7278** **Purdue University** **2716**  
Characterization and elucidation of the mechanism of mechanical stress inhibition of plant growth  
*Period* *Obligations*  
10/01/76-11/30/85 FY85: \$34,495 TOTAL: \$388,748  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mitchell, C. A. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAG 3-489** **Rose-Hulman Institute of Technology** **2717**  
Damping of the classical elastic cantilever beam by internal mechanical means  
*Period* *Obligations*  
12/01/83-12/31/85 FY85: \$15,000 TOTAL: \$44,573  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
North, C. M., Jr. LERC/Brown, G. V. 46-Mech Engr

**NAG 2-258** **University of Notre Dame** **2718**  
An experimental study of the leading edge vortex structure of a delta wing  
*Period* *Obligations*  
10/01/83-10/31/85 FY85: \$54,539 TOTAL: \$89,021  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Nelson, R. C. ARC/Schiff, L. B. 41-Aero Engr  
ARC/Malcolm, G. N.

**NAG 3-428** **University of Notre Dame** **2719**  
Materials development of electrical contacts for B-Si C  
*Period* *Obligations*  
05/25/83-10/30/85 FY85: \$50,000 TOTAL: \$150,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Zeller, M. V. LERC/Matus, L. G. 47-Materials Engr  
Sargent, G. A.  
Stanchina, W. E.

**NASA'S UNIVERSITY PROGRAM**  
**INDIANA (Continued)**

**NAG 3-545 University of Notre Dame 2720**  
 Modelling a leading edge separation bubble  
*Period Obligations*  
 04/15/84-04/13/86 FY85: \$44,307 TOTAL: \$68,513  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Cain, A. B. LERC/Povinelli, L. 41-Aero Engr  
 Akai, T. J. LERC/Schwab, J. R.  
 Mueller, T. J.

**NAG 3-622 University of Notre Dame 2721**  
 Electrical and spectroscopic studies of contacts or gallium phosphide  
*Period Obligations*  
 02/28/85-10/28/85 FY85: \$19,800 TOTAL: \$19,800  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Berry, W. B. LERC/Brinker, D. J. 45-Elec Engr  
 Bellina, J. J. LERC/Flood, D. J.  
 Zeller, M. V.

**NAG 5-557 University of Notre Dame 2722**  
 Error control techniques for satellite and space communications  
*Period Obligations*  
 06/01/85-05/31/86 FY85: \$45,444 TOTAL: \$45,444  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Costello, D. GSFC/Miller, W. H. 49-Engr, NEC  
 GSFC/Morakis, J. C.

**NCA 2-562401 University of Notre Dame 2723**  
 Coding considerations for fiber optic data networks  
*Period Obligations*  
 01/01/84-12/31/85 FY85: \$20,000 TOTAL: \$40,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Herro, M. A. ARC/Grant, T. L. 45-Elec Engr

**NCC 2-147 University of Notre Dame 2724**  
 Calculations of absolute intensities of transition relevant to the photodiagnosics of combustion  
*Period Obligations*  
 09/01/81-10/31/85 FY85: \$72,830 TOTAL: \$267,808  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Huo, W. M. ARC/Jaffe, R. L. 12-Chemistry  
 Schuler, R. H.

**NCC 3-48 University of Notre Dame 2725**  
 Effects of nonuniform flows or the aerodynamics and noise radiation of advanced turboprop  
*Period Obligations*  
 03/15/85-05/01/86 FY85: \$45,689 TOTAL: \$45,689  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Atassi, H. LERC/Groeneweg, J. F. 41-Aero Engr

**NSG 1419 University of Notre Dame 2726**  
 Structure of separated flow regions occurring near the leading edge of air foils including transition  
*Period Obligations*  
 06/01/77-10/31/85 FY85: \$46,999 TOTAL: \$319,263  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Mueller, T. J. LARC/Somers, D. M. 41-Aero Engr  
 LARC/Harvey, W. D.

**NSG 3048 University of Notre Dame 2727**  
 Alternatives for jet engine control  
*Period Obligations*  
 03/01/75-10/31/85 FY85: TOTAL: \$450,230  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Sain, M. K. LERC/Lehtinen, B. 45-Elec Engr

**IOWA**

**NAS 8-33728 Drake University 2728**  
 Assess use and development of a computer code rotating flows  
*Period Obligations*  
 03/17/80-05/30/86 FY85: \$26,216 TOTAL: \$118,772  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Kopicky, K. J. MSFC/Fowles, W. W. 19-Phys Sci, NEC  
 MSFC/Miller, T. L.

**NAG 1-313 Iowa State University 2729**  
 Simplified curve fits for the thermodynamic properties of equilibrium air  
*Period Obligations*  
 12/01/82-09/30/85 FY85: \$9,830 TOTAL: \$29,859  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Tannehill, J. C. LARC/Weilmuenster, K. J. 29-Math/Cmputer, NEC  
 LARC/Hamilton, H. H.

**NAG 2-30 Iowa State University 2730**  
 Low-speed, high-lift aerodynamics  
*Period Obligations*  
 03/01/80-05/31/85 FY85: TOTAL: \$47,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 James, W. D. ARC/Olson, L. E. 41-Aero Engr  
 ARC/Corsiglia, V. R.

**NAG 2-151 Iowa State University 2731**  
 Modeling of windblown dust on Mars and Venus  
*Period Obligations*  
 01/01/82-12/31/85 FY85: \$16,655 TOTAL: \$56,128  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Iverson, J. D. ARC/Smith, B. F. 19-Phys Sci, NEC  
 ARC/Summers, A. L.

**NAG 2-152 Iowa State University 2732**  
 Application of viscous-inviscid interaction methods to transonic turbulent flows  
*Period Obligations*  
 11/01/81-10/31/85 FY85: TOTAL: \$95,865  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Fletcher, R. H. ARC/Murphy, J. D. 41-Aero Engr  
 ARC/King, L. S.

**NAG 2-245 Iowa State University 2733**  
 Numerical computation of Space Shuttle orbital flow field  
*Period Obligations*  
 10/01/83-11/30/85 FY85: \$36,000 TOTAL: \$66,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Tannehill, J. C. ARC/Marvin, J. G. 41-Aero Engr  
 ARC/Chaussee, D. S.

# **NASA'S UNIVERSITY PROGRAM** **IOWA (Continued)**

**NAG 3-356 Iowa State University 2734**  
Investigation of unsteady axial-flow compressor stator flow  
*Period Obligations*  
11/30/82-09/30/86 FY85: TOTAL: \$35,230  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Okiishi, T. H. LERC/Strazisar, A. J. 41-Aero Engr  
Hathaway, M. D.

**NAG 3-521 Iowa State University 2735**  
Correlation of single and multi-stage data to obtain improved design and analysis models for axial-flow compressors  
*Period Obligations*  
02/06/84-07/04/86 FY85: \$40,415 TOTAL: \$76,389  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Serovy, G. K. LERC/Sandercock, D. M. 41-Aero Engr  
Roberts, W. B.

**NAG 5-104 Iowa State University 2736**  
Energetic study of the Goddard laboratory for atmospheric sciences general circulation model  
*Period Obligations*  
04/01/80-09/30/84 FY85: TOTAL: \$100,096  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Chen, T. C. GSFC/Straus, D. M. 31-Atmos Sci

**NAG 5-355 Iowa State University 2737**  
Diagnostic-analysis of diabatic heating and maintenance of thermal fields in the Southern Hemisphere  
*Period Obligations*  
08/01/83-07/31/86 FY85: TOTAL: \$107,285  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Chen, T. C. GSFC/Baker, W. 31-Atmos Sci

**NAG 5-544 Iowa State University 2738**  
Ultraviolet geometric albedo of Uranus  
*Period Obligations*  
06/01/85-05/31/86 FY85: \$8,100 TOTAL: \$8,100  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Neff, J. GSFC/Kondo, Y. 11-Astronomy  
Bergstralh, J.  
Baines, K.

**NAG 5-577 Iowa State University 2739**  
Global correction statistics based on satellite microwave brightness temperatures  
*Period Obligations*  
07/01/85-06/31/86 FY85: \$13,000 TOTAL: \$13,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Stanford, J. L. GSFC/Kalnay, E. 31-Atmos Sci

**NAG 5-707 Iowa State University 2740**  
Observations of the brightest normal m-type mira variables  
*Period Obligations*  
09/01/85-08/31/86 FY85: \$9,224 TOTAL: \$9,224  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Willson, L. A. GSFC/Kondo, Y. 11-Astronomy  
Brugel, E.

**NAG 8-360 Iowa State University 2741**  
Follow-up study of CG284-1 region. Follow-up study of CG2-95+0 region. Timing studies of X-ray sources possibly linked to X-ray sources  
*Period Obligations*  
06/20/80-12/31/84 FY85: TOTAL: \$17,948  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Lamb, R. C. MSFC/Stone, J. F. 11-Astronomy

**NAG 9-112 Iowa State University 2742**  
Partially differentiated meteorite parent bodies  
*Period Obligations*  
05/01/85-04/31/86 FY85: \$19,970 TOTAL: \$19,970  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kracher, A. JSC/Browne, I. D. 47-Materials Engr

**NCA 2-17 Iowa State University 2743**  
Viscous-inviscid interaction procedures for three-dimensional flow in inlets and ducts  
*Period Obligations*  
07/01/85-06/30/87 FY85: \$50,000 TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Pletcher, R. H. ARC/Steger, J. L. 46-Mech Engr  
ARC/Dalsem, W. V.

**NCA 2-340301 Iowa State University 2744**  
Investigation of new algorithms for solving the parabolized Navier-Stokes equations  
*Period Obligations*  
10/01/82-10/31/84 FY85: TOTAL: \$39,900  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Tannehill, J. C. ARC/Chaussee, D. S. 41-Aero Engr

**NCA 2-340501 Iowa State University 2745**  
Development of a new PNS computer code craters  
*Period Obligations*  
11/01/84-10/31/85 FY85: \$25,000 TOTAL: \$36,102  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Tannehill, J. C. ARC/Chaussee, D. S. 41-Aero Engr

**NCC 2-19 Iowa State University 2746**  
Wing/body interference flow investigation  
*Period Obligations*  
07/01/79-06/30/85 FY85: TOTAL: \$133,819  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Vogel, J. M. ARC/Olson, L. E. 41-Aero Engr  
James, W. ARC/Corsiglia, V. R.  
Genalo, L.

**NCC 2-174 Iowa State University 2747**  
Theoretical models for the primordial atmospheres of terrestrial planets and for the interiors of Uranus and Neptune  
*Period Obligations*  
02/01/82-02/28/86 FY85: \$20,142 TOTAL: \$82,045  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Richardson, S. M. ARC/Pollack, J. B. 19-Phys Sci, NEC  
Podolzk, M. ARC/Reynolds, R. T.

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**IOWA (Continued)**

**NCC 2-200 Iowa State University 2748**  
Study of turbulent boundary layers in oscillating flows  
*Period Obligations*  
06/01/82-08/31/85 FY85: \$3,500 TOTAL: \$90,750  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cook, W. J. ARC/Murphy, J. D. 41-Aero Engr

**NGT 16-002-802 Iowa State University 2749**  
NASA graduate student researchers program  
*Period Obligations*  
06/01/84-05/31/86 FY85: \$18,000 TOTAL: \$30,100  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Okiishi, T. HQ-LB/Owens, F. C. 46-Mech Engr

**NSG 2091 Iowa State University 2750**  
Study of viscous cross-flow effects on cylinders at high Reynolds numbers  
*Period Obligations*  
07/01/75-04/30/85 FY85: TOTAL: \$112,544  
*Prin. Invest. NASA Tech. Officer CASE Category*  
James, W. D. ARC/Malcolm, G. N. 41-Aero Engr  
ARC/Chapman, G. T.

**NAG 1-215 University of Iowa 2751**  
Design sensitivity analysis and optimization of built-up structures  
*Period Obligations*  
09/18/81-09/30/85 FY85: \$54,300 TOTAL: \$202,298  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Haug, E. J. LARC/Giles, G. L. 41-Aero Engr  
Choi, K. K. LARC/Sobieski, J.

**NAG 3-206 University of Iowa 2752**  
Improvement of ion thruster design by reduction of wall losses  
*Period Obligations*  
09/01/81-10/30/85 FY85: TOTAL: \$160,986  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Carpenter, R. T. LERC/Sovey, J. S. 13-Physics

**NAG 3-449 University of Iowa 2753**  
Interpretation of STS-3/plasma diagnostics package results in terms of large space structure plasma interactions  
*Period Obligations*  
07/10/83-01/30/86 FY85: \$75,008 TOTAL: \$232,363  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kurth, W. S. LERC/Purvis, C. K. 19-Phys Sci, NEC  
LERC/Ferguson, D. C.

**NAG 5-295 University of Iowa 2754**  
Measurement of low-energy electrons and protons in the Earth's magnetosphere  
*Period Obligations*  
02/01/83-01/31/86 FY85: \$50,000 TOTAL: \$142,003  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Frank, L. A. GSFC/Wales, R. O. 11-Astronomy

**NAG 5-310 University of Iowa 2755**  
Dynamics Explorer plasma wave instrument  
*Period Obligations*  
04/15/83-09/30/86 FY85: \$470,093 TOTAL: \$920,666  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Gurnett, D. A. GSFC/Bullock, G. D. 19-Phys Sci, NEC  
GSFC/Hoffman, R. A.

**NAG 5-449 University of Iowa 2756**  
Diffuse ultraviolet background with satellite data  
*Period Obligations*  
07/15/84-01/14/86 FY85: TOTAL: \$26,165  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Fix, J. D. GSFC/Bullock, G. D. 19-Phys Sci, NEC  
GSFC/Hoffman, R. A.

**NAG 5-483 University of Iowa 2757**  
Global auroral imaging  
*Period Obligations*  
11/01/84-12/31/85 FY85: \$590,168 TOTAL: \$590,168  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Frank, L. A. GSFC/Bullock, G. D. 19-Phys Sci, NEC  
GSFC/Hoffman, R. A.

**NAG 5-527 University of Iowa 2758**  
Data reduction and analysis of Helios plasma wave data  
*Period Obligations*  
06/01/85-05/31/86 FY85: \$15,000 TOTAL: \$15,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Gurnett, D. A. GSFC/Bullock, G. D. 11-Astronomy

**NAG 5-570 University of Iowa 2759**  
The role of plasma wave turbulence in the formation of shock waves in collisionless plasmas  
*Period Obligations*  
07/01/85-06/30/86 FY85: \$40,256 TOTAL: \$40,256  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Mellott, M. GSFC/Wales, R. O. 11-Astronomy

**NAGW 256 University of Iowa 2760**  
Wave accessibility and ducting  
*Period Obligations*  
10/15/81-09/30/85 FY85: TOTAL: \$97,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Calvert, W. HQ-EE/Lynch, J. T. 13-Physics  
HQ-EL/Brinton, H. C.

**NAGW 364 University of Iowa 2761**  
Investigation of radio emissions from planetary atmospheres  
*Period Obligations*  
07/01/82-05/31/84 FY85: TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Grabbe, C. L. HQ-EE/Lynch, J. T. 13-Physics  
HQ-EE/Wiskerchen, M. J.

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**NAGW 386** **University of Iowa** **2762**  
A multidisciplinary study of planetary solar and astrophysical radio emissions  
*Period* *Obligations*  
02/01/83-12/31/85 FY85: \$150,000 TOTAL: \$329,996  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gurnett, D. A. HQ-E/Rosendhal, J. D. 13-Physics  
HQ-E/Konkel, R. M.

**NAGW 537** **University of Iowa** **2763**  
Origin of channels and associated deposits in the elysium of Mars  
*Period* *Obligations*  
01/01/84-12/31/85 FY85: \$26,600 TOTAL: \$52,191  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Christiansen, E. H. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NAGW 672** **University of Iowa** **2764**  
Investigations of wave emissions from planetary magnetospheres  
*Period* *Obligations*  
10/01/84-05/31/85 FY85: \$25,000 TOTAL: \$25,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Grabbe, C. L. HQ-EE/Lynch, J. T. 13-Physics  
HQ-EE/Tihord, S. G.

**NAGW 796** **University of Iowa** **2765**  
Photometry of comet Halley  
*Period* *Obligations*  
08/01/85-07/31/86 FY85: \$36,204 TOTAL: \$36,204  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Neff, J. S. HQ-EL/Brinton, H. C. 11-Astronomy  
HQ-EL/Bergstrahl, J. T.

**NAS 2-11125** **University of Iowa** **2766**  
Pioneer 10/11 data analysis of Jovian charged particles experiment  
*Period* *Obligations*  
10/01/81-10/31/85 FY85: \$142,826 TOTAL: \$468,884  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Van Allen, J. A. ARC/Craig, R. A. 42-Astro Engr  
Goertz, C. K. ARC/Fimmel, R. O.

**NAS 5-11279** **University of Iowa** **2767**  
Solar wind plasma wave experiment for the Helios missions  
*Period* *Obligations*  
03/30/70-05/31/85 FY85: TOTAL: \$1,634,719  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gurnett, D. A. GSFC/Bullock, G. 11-Astronomy

**NAS 5-25689** **University of Iowa** **2768**  
Spin scan global aurora imaging instrument experiment for Dynamics Explorer  
*Period* *Obligations*  
02/10/80-02/28/85 FY85: TOTAL: \$1,694,302  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Frank, L. A. GSFC/Bullock, G. D. 11-Astronomy

**NAS 5-26257** **University of Iowa** **2769**  
International Sun Earth Explorer A and B data reduction and analysis  
*Period* *Obligations*  
07/01/80-12/31/84 FY85: TOTAL: \$1,337,522  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Frank, L. A. GSFC/Wales, R. O. 31-Atmos Sci

**NAS 5-26425** **University of Iowa** **2770**  
Use of MAGSAT anomaly data for crustal structure and mineral resources in the U.S. Midcontinent  
*Period* *Obligations*  
12/03/80-09/03/83 FY85: TOTAL: \$62,271  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Carmichael, R. S. GSFC/Oseroff, H. 32-Geological Sci  
Anderson, R. R.  
Clark, K. F.

**NAS 5-26819** **University of Iowa** **2771**  
Data reduction and analysis of the (ISEE) international Sun-Earth explorers plasma wave instrument  
*Period* *Obligations*  
03/01/82-12/31/84 FY85: TOTAL: \$691,368  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gurnett, D. A. GSFC/Wales, R. O. 11-Astronomy

**NAS 5-26843** **University of Iowa** **2772**  
A plasma wave investigation for the origin of plasmas in the Earth's neighborhood polar plasma laboratory  
*Period* *Obligations*  
06/07/82-09/30/86 FY85: \$3,346 TOTAL: \$347,229  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gurnett, D. A. GSFC/O'Brien, J. 13-Physics

**NAS 5-26857** **University of Iowa** **2773**  
A plasma wave investigation for the origin of plasmas in the Earth's neighborhood geomagnetic tail laboratory  
*Period* *Obligations*  
06/07/82-09/30/86 FY85: \$28,424 TOTAL: \$148,212  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gurnett, D. A. GSFC/O'Brien, J. J. 13-Physics

**NAS 5-26858** **University of Iowa** **2774**  
Conduct a definition study of the comprehensive plasmas instrument for measurement of plasma in the Earth's magnetotail under the OPEN project  
*Period* *Obligations*  
05/24/82-09/30/86 FY85: \$59,753 TOTAL: \$243,105  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Frank, L. A. GSFC/O'Brien, J. J. 11-Astronomy

**NAS 5-27358** **University of Iowa** **2775**  
Definition of advanced auroral imaging instrumentation at visible wavelengths (open mission)  
*Period* *Obligations*  
12/10/82-09/30/86 FY85: \$6,200 TOTAL: \$233,790  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Frank, L. A. GSFC/O'Brien, J. J. 13-Physics

# **NASA'S UNIVERSITY PROGRAM** **IOWA (Continued)**

**NAS 5-28700**                      **University of Iowa**                      **2776**  
Provide data reduction and analysis for the International Sun  
Earth Explorer (ISEE 1 and 2) spacecraft  
*Period*                                      *Obligations*  
01/24/85-10/31/85                      FY85: \$339,000                      TOTAL: \$339,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Frank, L.                      GSFC/Wales, R. O.                      31-Atmos Sci

**NAS 5-28701**                      **University of Iowa**                      **2777**  
Data reduction and analysis for the ISEE spacecraft's plasma  
wave experiment  
*Period*                                      *Obligations*  
01/02/85-10/31/85                      FY85: \$337,000                      TOTAL: \$337,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Gurnett, D. A.                      GSFC/Wales, R. O.                      31-Atmos Sci

**NAS 8-32807**                      **University of Iowa**                      **2778**  
Definition of instruments for an ejectable plasma diagnostics  
package for Spacelab 2 mission  
*Period*                                      *Obligations*  
10/03/77-09/30/86                      FY85: \$720,000                      TOTAL: \$6,211,127  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Shanhan, S. D.                      MSFC/Soutullo, B.                      31-Atmos Sci  
MSFC/Ise, R.

**NAS 8-33770**                      **University of Iowa**                      **2779**  
A recoverable plasma diagnostics package for Spacelab  
*Period*                                      *Obligations*  
07/25/80-12/31/85                      FY85: \$333,014                      TOTAL: \$2,672,611  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Shawhan, S.                      MSFC/Guynes, B. V.                      13-Physics  
MSFC/Ise, R.

**NCC 1-97**                      **University of Iowa**                      **2780**  
Application of the Stem-II comprehensive eulerian combined  
transport/transformation/removal model of data from the FY-84  
Philadelphia field study  
*Period*                                      *Obligations*  
04/23/85-04/22/86                      FY85: \$73,500                      TOTAL: \$73,500  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Carmichael, G. R.                      LARC/Shiple, S. T.                      31-Atmos Sci  
LARC/Harriss, R. C.

**NGL 16-001-002**                      **University of Iowa**                      **2781**  
Theoretical and experimental studies related to particles and  
fields associated with major bodies of solar system and with  
interplanetary space  
*Period*                                      *Obligations*  
05/23/62-11/30/85                      FY85: \$173,080                      TOTAL: \$6,305,782  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Van Allen, J. A.                      HQ-EE/Lynch, J. T.                      13-Physics  
HQ-EE/Tilford, S. G.

**NGL 16-001-043**                      **University of Iowa**                      **2782**  
Waves in plasmas  
*Period*                                      *Obligations*  
03/28/67-11/30/85                      FY85: \$180,000                      TOTAL: \$1,927,302  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Gurnett, D. A.                      HQ-EE/Lynch, J. T.                      13-Physics  
HQ-EE/Hudson, R. D.

**NGT 16-003-800**                      **University of Iowa**                      **2783**  
NASA graduate student researchers program  
*Period*                                      *Obligations*  
07/01/85-06/30/86                      FY85: \$18,000                      TOTAL: \$18,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Oberley, L. W.                      HQ-LE/Owens, F. C.                      41-Aero Engr

**NSG 7632**                      **University of Iowa**                      **2784**  
Investigation of charged particle acceleration mechanisms in  
space plasmas  
*Period*                                      *Obligations*  
07/01/79-10/31/85                      FY85: \$50,000                      TOTAL: \$305,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Goertz, C. K.                      HQ-EE/Wiskerchen, M. J.                      19-Phys Sci, NEC  
HQ-EZ/Schmerling, E. R.

## **KANSAS**

**NAGW 510**                      **Kansas State University**                      **2785**  
Geologic mapping Galileo regio (JG-3) quadrangle, Ganymede  
*Period*                                      *Obligations*  
09/01/83-08/31/86                      FY85: \$12,438                      TOTAL: \$24,173  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Underwood, J. R., Jr.                      HQ-EL/Boyce, J. M.                      32-Geological Sci  
HQ-EL/Holt, H.

**NAS 9-16457**                      **Kansas State University**                      **2786**  
Spectral input crop growth, development, and yield modeling  
for wheat and barley use of measured soil moisture data in  
grop growth, development and yield estimation  
*Period*                                      *Obligations*  
11/01/81-01/01/86                      FY85: \$155,000                      TOTAL: \$983,200  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Kanemasu, E. T.                      JSC/Hall, F. G.                      39-Env Sci, NEC  
Asrar, G.

**NAG 1-134**                      **University of Kansas**                      **2787**  
A theoretical investigation of wing rocking  
*Period*                                      *Obligations*  
01/01/81-12/31/85                      FY85: \$18,067                      TOTAL: \$125,341  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Lan, C. E.                      LARC/Brandon, J.                      41-Aero Engr  
LARC/Nguyen, L. T.

**NAG 1-308**                      **University of Kansas**                      **2788**  
Transonic airfoil design with nonuniform flow effects  
*Period*                                      *Obligations*  
11/03/82-01/02/86                      FY85:                      TOTAL: \$55,306  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Lan, C. E.                      LARC/Henderson, W. P.                      41-Aero Engr  
LARC/Putnam, L. E.

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**KANSAS (Continued)**

**NAG 1-324 University of Kansas 2789**  
 Advanced sidestick controller mechanizations for general aviation aircraft  
*Period Obligations*  
 01/10/83-09/30/85 FY85: TOTAL: \$59,790  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Downing, D. LARC/Bergeron, H. P. 41-Aero Engr  
 Roskam, J.

**NAG 1-345 University of Kansas 2790**  
 Aerodynamics and flight dynamics of subsonic aircraft  
*Period Obligations*  
 03/03/83-04/30/86 FY85: \$206,063 TOTAL: \$625,844  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Roskam, J. LARC/Williams, L. J. 41-Aero Engr  
 Downing, D. R. LARC/Hastings, E. C.  
 Smith, H. W.

**NAG 1-396 University of Kansas 2791**  
 Calculation of vortex-flap aerodynamic characteristics  
*Period Obligations*  
 08/15/83-12/31/85 FY85: TOTAL: \$43,684  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lan, C. E. LARC/Gainer, T. G. 41-Aero Engr

**NAG 1-455 University of Kansas 2792**  
 Navier-Stokes calculations of vortex flow  
*Period Obligations*  
 03/01/84-09/30/85 FY85: \$39,957 TOTAL: \$59,932  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lan, C. E. LARC/Margason, R. J. 41-Aero Engr  
 LARC/Liu, C. H.

**NAG 1-490 University of Kansas 2793**  
 Analysis of an angle-only microwave landing system (MLS) guidance system  
*Period Obligations*  
 06/01/84-08/31/85 FY85: TOTAL: \$21,533  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Downing, D. R. LARC/Bryant, W. H. 41-Aero Engr

**NAG 1-514 University of Kansas 2794**  
 Analytic modeling of lightning induced field penetration into aircraft  
*Period Obligations*  
 08/27/84-02/28/86 FY85: \$52,587 TOTAL: \$64,287  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Demarest, K. R. LARC/Pitts, F. L. 45-Elec Engr  
 LARC/Zaepfel, K. P.

**NAG 1-616 University of Kansas 2795**  
 Experimental investigation of dynamic ground effect  
*Period Obligations*  
 09/19/85-09/18/86 FY85: \$20,049 TOTAL: \$20,049  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lan, C. E. LARC/Paulson, J. W., Jr. 41-Aero Engr  
 Muirhead, V. U. LARC/Kemmerly, G. T.

**NAG 2-371 University of Kansas 2796**  
 An investigation of empennage buffeting  
*Period Obligations*  
 09/15/85-05/14/86 FY85: \$38,006 TOTAL: \$38,006  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lan, E. C. ARC/Fisher, D. F. 41-Aero Engr  
 Roskam, J.  
 Wentz, W. H., Jr.

**NAG 3-11 University of Kansas 2797**  
 Dynamic distortion analysis technology study  
*Period Obligations*  
 11/15/79-12/31/85 FY85: TOTAL: \$133,294  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Booth, F. W. LERC/Neumann, H. E. 41-Aero Engr

**NAG 5-30 University of Kansas 2798**  
 Measurement of soil using remote sensing active microwave techniques  
*Period Obligations*  
 03/01/80-04/30/85 FY85: TOTAL: \$1,030,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Ulaby, F. T. GSFC/Schmugge, T. J. 39-Env Sci, NEC  
 Dobson, C. GSFC/O'Neill, P. E.

**NAG 5-268 University of Kansas 2799**  
 Scattering models in the microwave regime  
*Period Obligations*  
 09/01/82-08/31/84 FY85: TOTAL: \$84,800  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Fung, A. K. GSFC/Choudhury, B. 55-Agriculture Sci

**NAG 5-271 University of Kansas 2800**  
 Determination of the sources of radar scattering  
*Period Obligations*  
 09/01/82-04/30/86 FY85: \$78,750 TOTAL: \$184,860  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Moore, R. K. GSFC/Brakke, T. W. 55-Agriculture Sci  
 Ulaby, F.

**NAG 5-272 University of Kansas 2801**  
 Measuring and modeling of the dielectric properties and attenuation of vegetation  
*Period Obligations*  
 09/01/82-10/31/84 FY85: TOTAL: \$125,265  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Ulaby, F. T. GSFC/Schmugge, T. 55-Agriculture Sci  
 Martin, C.

**NAG 5-389 University of Kansas 2802**  
 Measurements of micrometeorological parameters of testing large-scale models  
*Period Obligations*  
 02/01/84-02/28/86 FY85: \$40,000 TOTAL: \$70,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Kanemasu, E. T. GSFC/Qurney, R. 31-Atmos Sci  
 Asrar, G.

## NASA'S UNIVERSITY PROGRAM KANSAS (Continued)

<b>NAGW 187</b>	<b>University of Kansas</b>	<b>2803</b>
Cometary atmospheres		
<i>Period</i>	<i>Obligations</i>	
06/01/81-12/31/84	FY85:	TOTAL: \$63,537
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Beard, D. B.	HQ-EL/Brinton, H. C.	19-Phys Sci, NEC
	HQ-EL/Brunk, W. E.	

<b>NCC 1-79</b>	<b>University of Kansas</b>	<b>2810</b>
The specification, integration, and testing of a unified advanced flight management/flight control system		
<i>Period</i>	<i>Obligations</i>	
06/14/83-06/30/86	FY85: \$49,277	TOTAL: \$115,007
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Downing, D. R.	LARC/Bryant, W. H.	41-Aero Engr
Fortin, P. E.		

<b>NAGW 217</b>	<b>University of Kansas</b>	<b>2804</b>
To model the magnetic field of Jupiter		
<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/86	FY85: \$29,470	TOTAL: \$126,927
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Beard, D. B.	HQ-EE/Lynch, J. T.	19-Phys Sci, NEC
	HQ-EE/Shawhan, S. D.	

<b>NCC 2-112</b>	<b>University of Kansas</b>	<b>2811</b>
<b>Investigation of the performance improvements with the free-tip rotor on helicopters</b>		
<i>Period</i>	<i>Obligations</i>	
<b>12/01/80-11/30/84</b>	<b>FY85:</b>	<b>TOTAL: \$136,384</b>
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
<b>Fortin, P. E.</b>	<b>ARC/Stroub, R. H.</b>	<b>41-Aero Engr</b>
<b>Van Aken, J. M.</b>	<b>ARC/Young, L.</b>	

<b>NAGW 289</b>	<b>University of Kansas</b>	<b>2805</b>
Numerical and observational study of charged particles motion in the mid and inner Jovian magnetosphere		
<i>Period</i>	<i>Obligations</i>	
11/01/81-10/14/85	FY85:	TOTAL: \$80,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Armstrong, T. P.	HQ-EE/Lynch, J. T.	13-Physics
	HQ-EE/Shawhan, S. D.	

<b>NCC 2-175</b>	<b>University of Kansas</b>	<b>2812</b>
Investigation of a free-tip rotor configuration		
<i>Period</i>	<i>Obligations</i>	
02/01/82-06/30/86	FY85: \$86,546	TOTAL: \$165,868
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lan, C. E.	ARC/Stroub, R. H.	41-Aero Engr
Fortin, P. E.	ARC/Young, L.	
Kumagaj, H.		

<b>NAGW 381</b>	<b>University of Kansas</b>	<b>2806</b>
Research in support of NASA's space science and application program		
<i>Period</i>	<i>Obligations</i>	
11/01/82-10/31/84	FY85:	TOTAL: \$87,770
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Frost, V. S.	HQ-E/Rosendhal, J. D.	11-Astronomy
	HQ-EP/Schrom, J.	

<b>NCC 2-242</b>	<b>University of Kansas</b>	<b>2813</b>
<b>V/STOL handling and control power requirements</b>		
<i>Period</i>	<i>Obligations</i>	
06/01/83-12/31/85	FY85: \$14,000	TOTAL: \$44,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roskam, J.	ARC/Franklin, J. A.	41-Aero Engr

<b>NAS 9-15421</b>	<b>University of Kansas</b>	<b>2807</b>
<b>Radar measurements in agricultural applications</b>		
<i>Period</i>	<i>Obligations</i>	
10/01/77-02/01/85	FY85:	TOTAL: \$709,620
<i>Prin. Invest</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ulaby, F. T.	JSC/Pitts, D.	31-Atmos Sci

<b>NCC 2-251</b>	<b>University of Kansas</b>	<b>2814</b>
Computerized structural analysis		
<i>Period</i>		<i>Obligations</i>
06/27/83-08/26/85	FY85:	TOTAL: \$38,102
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fortin, P. E.	ARC/Gupta, K. K.	29-Math/Cmputer,NEC
	ARC/Knight, R. J.	

<b>NASW 3438</b>	<b>University of Kansas</b>	<b>2808</b>
Creation of an experimental technical transfer project University of Kansas Center for Research, Incorporated		
<i>Period</i>	<i>Obligations</i>	
01/07/81-06/30/85	FY85:	TOTAL: \$147,567
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Barr, B. G.	HQ-LG/Ault, L. A.	46-Mech Engr
	HQ-LG/Bivins, R. G.	

<b>NCC 2-293</b>	<b>University of Kansas</b>	<b>2815</b>
Development of an integrated model determination and control system design procedure		
<i>Period</i>	<i>Obligations</i>	
02/01/84-05/31/86	FY85: \$27,320	TOTAL: \$77,471
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Downing, D. R.	ARC/Kempel, R. W.	41-Aero Engr
Fortin, P. E.	ARC/Maine, T. A.	
Paduano, J. D.		

<b>NCC 1-6</b>	<b>University of Kansas</b>	<b>2809</b>
A research program to reduce interior noise in general aviation airplanes		
<i>Period</i>	<i>Obligations</i>	
05/01/79-04/30/85	FY85:	TOTAL: \$338,961
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roskam, J.	LARC/Powell, C. A.	41-Aero Engr

<b>NCC 2-313</b>	<b>University of Kansas</b>	<b>2816</b>
Numerical analysis of structures		
<i>Period</i>		<i>Obligations</i>
07/01/84-05/31/86	FY85:	TOTAL: \$21,930
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fortin, P.	ARC/Gupta, K. K.	41-Aero Engr
	ARC/Knight, R. J.	



**NASA'S UNIVERSITY PROGRAM  
KANSAS (Continued)**

**NCC 2-320 University of Kansas 2817**  
Investigation to improve the test section flow quality in the Ames 80x120 wind tunnel

Period	Obligations	
11/01/84-10/31/85	FY85: \$49,870	TOTAL: \$49,870
Prin. Invest.	NASA Tech. Officer	CASE Category
Fortin, P. E.	ARC/Falarski, M. D.	41-Aero Engr
Van Aken, J. M.	ARC/Olson, L. E.	

**NCC 2-351 University of Kansas 2818**  
Verifying the use of a whirl rig to check free tip rotor system

Period	Obligations	
06/01/85-06/01/86	FY85: \$31,794	TOTAL: \$31,794
Prin. Invest.	NASA Tech. Officer	CASE Category
Fortin, P. E.	ARC/Stroub, R. H.	41-Aero Engr
Martin, D.	ARC/Young, L. A.	

**NCC 4-3 University of Kansas 2819**  
Graduate research in aeronautical flight test techniques

Period	Obligations	
12/15/80-09/30/85	FY85: \$19,777	TOTAL: \$206,956
Prin. Invest.	NASA Tech. Officer	CASE Category
Fortin, P. E.	ARC/Ayers, T. G.	41-Aero Engr
Clarke, R.	ARC/Gera, J.	
Downing, D. R.		

**NCC 9-7 University of Kansas 2820**  
Radar studies of agricultural crop in support of the Firex/Samex program

Period	Obligations	
11/15/82-09/30/84	FY85:	TOTAL: \$113,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ulaby, F. T.	JSC/Browne, I. D.	39-Env Sci, NEC

**NGL 17-004-024 University of Kansas 2821**  
Research on the applications of satellite remote sensing

Period	Obligations	
04/06/72-03/31/86	FY85: \$33,000	TOTAL: \$1,573,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Martinko, E. A.	HQ-EL/Tuyahov, A. J.	39-Env Sci, NEC

**NGT 07-002-800 University of Kansas 2822**  
NASA graduate student researchers program

Period	Obligations	
05/21/84-05/20/86	FY85: \$18,000	TOTAL: \$33,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Phillips, T. G.	HQ-LB/Owens, F. C.	41-Aero Engr

**NSG 1629 University of Kansas 2823**  
An investigation of vortex induced aerodynamic characteristics of supersonic cruise configurations

Period	Obligations	
06/16/79-12/31/85	FY85: \$41,129	TOTAL: \$176,459
Prin. Invest.	NASA Tech. Officer	CASE Category
Lan, C. E.	LARC/Gainer, T. G.	41-Aero Engr
	LARC/Lamar, J. E.	

**NSG 3290 University of Kansas 2824**  
Self consistent numerical simulation of plasma insulator interactions in space

Period	Obligations	
08/16/79-11/28/85	FY85: \$60,000	TOTAL: \$322,571
Prin. Invest.	NASA Tech. Officer	CASE Category
Armstrong, T. P.	LERC/Grier, N. T.	13-Physics
Bass, R.	LERC/Stevens, N. J.	

**NSG 4028 University of Kansas 2825**  
Modeling of aircraft performance from flight test results using dynamic test techniques

Period	Obligations	
06/01/82-09/30/85	FY85:	TOTAL: \$68,681
Prin. Invest.	NASA Tech. Officer	CASE Category
Roskam, J.	ARC/Burcham, F. W.	41-Aero Engr
Lovett, M.	ARC/Redin, P. C.	

**NAG 1-114 Wichita State University 2826**  
Theoretical and experimental studies of three dimensional flow interference and drag on general aviation aircraft

Period	Obligations	
01/01/81-09/30/83	FY85:	TOTAL: \$87,435
Prin. Invest.	NASA Tech. Officer	CASE Category
Wentz, W. H.	LARC/Holmes, B. J.	41-Aero Engr
Ellis, D.		

**NAG 1-401 Wichita State University 2827**  
Flight investigation of instability and transition

Period	Obligations	
09/01/83-03/31/85	FY85:	TOTAL: \$207,754
Prin. Invest.	NASA Tech. Officer	CASE Category
Wentz, W. H.	LARC/Holmes, B. J.	41-Aero Engr
	LARC/Holmes, B. J.	

**NAG 1-452 Wichita State University 2828**  
Weight estimation techniques for composite airplanes in general aviation industry

Period	Obligations	
03/01/84-01/31/86	FY85:	TOTAL: \$46,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Paramasium, T.	LARC/Koenig, R. W.	41-Aero Engr
Smith, B. L.		

**NAG 3-284 Wichita State University 2829**  
Application of electromagnetic impulse de-icing to general aviation aircraft wings

Period	Obligations	
05/15/82-10/22/85	FY85: \$250,723	TOTAL: \$797,177
Prin. Invest.	NASA Tech. Officer	CASE Category
Zumwalt, G. W.	LERC/Reinmann, J.	41-Aero Engr
Bernhart, W.		
Schrag, R.		

**NAG 3-566 Wichita State University 2830**  
Program to verify water droplet trajectory codes

Period	Obligations	
07/25/84-11/24/85	FY85: \$61,700	TOTAL: \$249,700
Prin. Invest.	NASA Tech. Officer	CASE Category
Zumwalt, G. W.	LERC/Shaw, R. J.	41-Aero Engr



# **NASA'S UNIVERSITY PROGRAM** **KENTUCKY (Continued)**

**NCC 2-213**                      **University of Louisville**                      **2845**  
Development and testing of a mouse simulated space flight model

<i>Period</i>	<i>Obligations</i>	
11/01/82-01/28/86	FY85: \$25,672	TOTAL: \$82,592
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sonnenfeld, G.	ARC/Mandel, A. D.	51-Biological Sci
Bowen, S. W.		

**NSG 2325**                      **University of Louisville**                      **2846**  
Renal function, water and electrolyte balance and intestinal transport in hypokinetic animals

<i>Period</i>	<i>Obligations</i>	
06/01/78-10/31/85	FY85: \$50,000	TOTAL: \$326,768
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Musacchia, X. J.	ARC/Holton, E. M.	51-Biological Sci

**NAS 8-34424**                      **Western Kentucky University**                      **2847**  
Ray tracing of Jovian low frequency radiation

<i>Period</i>	<i>Obligations</i>	
07/10/81-12/31/85	FY85:	TOTAL: \$37,917
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Six, N. F.	MSFC/Green, J. L.	31-Atmos Sci
	MSFC/Chappell, R.	

**NSG 5238**                      **Western Kentucky University**                      **2848**  
Ultraviolet observations of high excitation planetary nebulae

<i>Period</i>	<i>Obligations</i>	
02/15/78-08/15/85	FY85:	TOTAL: \$40,735
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hackney, K. R.	GSFC/Boggess, A.	11-Astronomy
Hackney, R. L.		

## **LOUISIANA**

**NAG 3-477**                      **Louisiana State University - Baton Rouge**                      **2849**  
Shock tube study of the fuel structure effects on the chemical kinetic mechanisms responsible for soot formation

<i>Period</i>	<i>Obligations</i>	
10/25/83-10/23/86	FY85: \$90,100	TOTAL: \$179,637
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Frenklach, M.	LERC/Lezberg, E. A.	43-Chem Engr

**NAG 5-71**                      **Louisiana State University - Baton Rouge**                      **2850**  
Ultraviolet spectroscopy of selected astronomical sources

<i>Period</i>	<i>Obligations</i>	
07/01/80-06/30/86	FY85: \$10,262	TOTAL: \$76,561
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Drilling, J. S.	GSFC/Kondo, Y.	11-Astronomy
Schoenberger, D.		

**NAG 5-197**                      **Louisiana State University - Baton Rouge**                      **2851**  
Search for cataclysmic binaries continuing strongly magnetic white dwarfs

<i>Period</i>	<i>Obligations</i>	
07/01/81-12/31/85	FY85:	TOTAL: \$48,431
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Weaver, A. C.	GSFC/Kondo, Y.	11-Astronomy
Luck, R. E.		

**NAG 5-540**                      **Louisiana State University - Baton Rouge**                      **2852**  
Research relative to database interfaces on NASA's heterogeneous database systems

<i>Period</i>	<i>Obligations</i>	
05/15/85-05/16/86	FY85: \$30,000	TOTAL: \$30,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Iyengar, S. S.	GSFC/Jacobs, B.	22-Computer Science
	GSFC/Berbert, J.	

**NAGW 48**                      **Louisiana State University - Baton Rouge**                      **2853**  
Electron positive ion interaction

<i>Period</i>	<i>Obligations</i>	
04/01/80-03/31/86	FY85: \$35,000	TOTAL: \$226,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Henry, R. J.	HQ-EL/Brinton, H. C.	21-Mathematics
	HQ-EL/Brunk, W. E.	

**NAGW 481**                      **Louisiana State University - Baton Rouge**                      **2854**  
Laboratory astrophysics projects

<i>Period</i>	<i>Obligations</i>	
08/01/83-11/30/85	FY85: \$15,000	TOTAL: \$48,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Henry, R. J.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

**NAGW 550**                      **Louisiana State University - Baton Rouge**                      **2855**  
Origin and transport of high energy particles in this galaxy

<i>Period</i>	<i>Obligations</i>	
03/01/84-02/28/86	FY85: \$22,896	TOTAL: \$43,696
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wefel, J. P.	HQ-EZ/Cline, T. L.	11-Astronomy
	HQ-EZ/Kaluzienski, L. J.	

**NAS 3-23542**                      **Louisiana State University - Baton Rouge**                      **2856**  
Shock tube study of the fuel molecular structure effects on the chemical kinetic mechanisms for soot formation

<i>Period</i>	<i>Obligations</i>	
09/28/82-04/15/84	FY85:	TOTAL: \$81,640
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Frenklach, M.	LERC/Haggard, J.	43-Chem Engr

**NASA'S UNIVERSITY PROGRAM**  
**LOUISIANA (Continued)**

**NAS 5-28096 Louisiana State University - Baton Rouge 2857**  
 Training and applications software for the nation of Bangladesh

<i>Period</i>	<i>Obligations</i>	
06/20/84-09/30/85	FY85:	TOTAL: \$215,623
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hill, J. M.	GSFC/Williams, M.	39-Env Sci, NEC
Huh, O. K.		
Harlow, C. A.		

**NAS 5-28756 Louisiana State University - Baton Rouge 2858**  
 Utilization of remote sensing of thematic mapper data to improve our understanding of estuarine processes and their influences

<i>Period</i>	<i>Obligations</i>	
09/12/85-12/06/88	FY85: \$171,501	TOTAL: \$171,501
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bauman, R. H.	GSFC/Oseroff, H.	39-Env Sci, NEC

**NAS 9-16801 Louisiana State University - Shreveport 2859**  
 Experimental studies to evaluate behavioral and performance side effects of several anti-motion sickness medications

<i>Period</i>	<i>Obligations</i>	
09/30/82-03/31/86	FY85: \$44,941	TOTAL: \$140,739
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wood, C. D.	JSC/Harris, J. W.	59-Life Sci, NEC

**NSG 7534 Northeast Louisiana University 2860**  
 Stratigraphy and crater morphology

<i>Period</i>	<i>Obligations</i>	
02/01/79-05/14/86	FY85: \$32,000	TOTAL: \$116,406
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dehon, R.	HQ-EL/Scott, D. H.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAGW 701 Southern Univ & A&M College 2861**  
 Development of theoretical algorithms and models for pricing mechanisms

<i>Period</i>	<i>Obligations</i>	
12/21/84-12/20/85	FY85: \$150,000	TOTAL: \$150,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roquemore, L.	HQ-SU/Chisler, J.	21-Mathematics

**NAS 1-15335 Southern Univ & A&M College 2862**  
 Atomic oxygen stimulated outgassing experiment for the long duration exposure facility

<i>Period</i>	<i>Obligations</i>	
04/07/78-09/01/86	FY85: \$11,000	TOTAL: \$72,426
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Scott, R. L.	LARC/Carter, D. J., Jr.	31-Atmos Sci

**NASW 3786 Southern Univ & A&M College 2863**  
 Programming documentation checkout and procedures to accomplish automation of the financial operating plans, and budget line items

<i>Period</i>	<i>Obligations</i>	
06/01/83-08/31/85	FY85:	TOTAL: \$138,160
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roquemore, L.	HQ-NS/Lewis, D.	22-Computer Science

**NASW 3846 Southern Univ & A&M College 2864**  
 Development, administration and evaluation of transportable college level courses in the access of the NASA/RECON system

<i>Period</i>	<i>Obligations</i>	
12/08/83-09/30/84	FY85:	TOTAL: \$149,214
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Unavailable	HQ-NS/Smith, J.	99-Multi-Discip

**NGT 19-010-900 Southern Univ & A&M College 2865**  
 NASA recon to train undergraduate scientists and engineers in the use of state of the art scientific and technical information systems

<i>Period</i>	<i>Obligations</i>	
07/01/85-06/30/86	FY85: \$125,000	TOTAL: \$125,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roquemore, L.	HQ-NI/Wilson, J.	22-Computer Science
	HQ-U/Pohly, J.	

**NAG 1-356 Southern University - Shreveport 2866**  
 Real-time computer controlled study of the photocatalytic effects of powdered semiconductors suspensions on the oxidation of cyanide

<i>Period</i>	<i>Obligations</i>	
04/06/83-07/05/84	FY85:	TOTAL: \$29,784
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Miles, A. M.	LARC/Byvik, C. E.	12-Chemistry
	LARC/Conway, E. J.	

**NAG 2-101 Tulane University 2867**  
 Localization and histochemical and physiologic characteristics of the central emetic apparatus related to motion sickness

<i>Period</i>	<i>Obligations</i>	
03/01/81-02/28/86	FY85: \$61,923	TOTAL: \$262,432
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brizze, K. R.	ARC/Mehler, W. R.	56-Medical Sciences
Norris, C. H.	ARC/Corcoran, M. L.	
Pedigo, N. W.		

**NCA 2-800301 Tulane University 2868**  
 Evolutionary relationships among gene systems

<i>Period</i>	<i>Obligations</i>	
10/01/82-12/31/84	FY85:	TOTAL: \$13,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Johnson, E. J.	ARC/MacElroy, R. D.	51-Biological Sci

**NCA 2-800501 Tulane University 2869**  
 Determination of sequence homology of lac dna sequences of thermus t2 and escherichia coli related to motion sickness

<i>Period</i>	<i>Obligations</i>	
01/01/85-12/31/86	FY85: \$6,500	TOTAL: \$18,492
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Johnson, E. J.	ARC/MacElroy, R. D.	51-Biological Sci

**NAG 1-485 University of New Orleans 2870**  
 Optimal application of Morrisons interactive noise removal for deconvolution

<i>Period</i>	<i>Obligations</i>	
06/01/84-01/31/86	FY85: \$11,638	TOTAL: \$21,612
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
loup, G. E.	LARC/Wood, G. M., Jr.	
loup, J. W.		19-Phys Sci, NEC

**NASA'S UNIVERSITY PROGRAM**  
**LOUISIANA (Continued)**

**NAS13-231 University of New Orleans 2871**  
 Analysis of urban environments from LANDSAT-4 thematic mapper data  
*Period Obligations*  
 09/01/83-09/01/84 FY85: TOTAL: \$12,487  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wang, S. C. NSTL/Quattrochi, D. A. 71-Anthropology

**NAG 5-715 Bowie State College 2877**  
 Launch vehicle ground truth ephemeris for micro-network applications  
*Period Obligations*  
 09/15/85-09/19/86 FY85: \$98,900 TOTAL: \$98,900  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bhatia, M. S. GSFC/Kraft, J. D. 22-Computer Science

**NAS13-266 University of New Orleans 2872**  
 Applications of LANDSAT thematic mapper data to geographic research  
*Period Obligations*  
 03/12/85-07/30/85 FY85: \$3,773 TOTAL: \$3,773  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wang, S. C. NSTL/Howard, S. A. 71-Anthropology

**NAS 5-28160 Bowie State College 2878**  
 Design of interactive frame based cluttered desktop system  
*Period Obligations*  
 06/20/84-09/19/85 FY85: TOTAL: \$65,182  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Srivastava, S. GSFC/Truszkowski, W. F. 22-Computer Science

**MAINE**

**NAG 3-576 Colby College 2873**  
 Leo high voltage solar array arcing response model  
*Period Obligations*  
 10/25/84-01/31/86 FY85: \$24,001 TOTAL: \$24,001  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Metz, R. N. LERC/Snyder, D. B. 45-Elec Engr  
 LERC/Purvis, C. K.

**NCA 5-96 Bowie State College 2879**  
 Training of students in engineering related subjects  
*Period Obligations*  
 08/16/83-08/15/86 FY85: TOTAL: \$120,145  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Ponds, J. W. GSFC/Mundy, J. R. 49-Engr, NEC  
 GSFC/Chapman, J. W.

**NAGW 607 University of Maine - Orono 2874**  
 Regulation of methylated gas emission from coastal and inland salt marshes  
*Period Obligations*  
 02/01/84-11/15/85 FY85: \$45,530 TOTAL: \$73,287  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 King, G. M. HQ-EB/Geib, D. 99-Multi-Discip

**NGR 21-027-010 Bowie State College 2880**  
 Holographic gratings for spectrographic applications study of aberrations  
*Period Obligations*  
 05/14/73-09/30/86 FY85: \$18,674 TOTAL: \$213,636  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bhatia, M. S. GSFC/Caruso, A. J. 13-Physics  
 GSFC/Osantowski, J. F.

**NGT 21-027-012 Bowie State College 2881**  
 Training of undergraduate students in sciences and engineering  
*Period Obligations*  
 06/01/74-03/31/85 FY85: TOTAL: \$475,325  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Kirksey, C. H. GSFC/Chapman, J. W., Jr. 99-Multi-Discip

**MARYLAND**

**NAG 5-494 Bowie State College 2875**  
 Development of geographic information system functions  
*Period Obligations*  
 02/01/85-01/31/86 FY85: \$83,438 TOTAL: \$83,438  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bhatia, M. S. GSFC/Goldberg, M. J. 22-Computer Science  
 Srivastava, S. GSFC/Berbert, J. H.

**NSG 5009 Bowie State College 2882**  
 Characterization of the physico-chemical properties of polymeric materials for aerospace flights  
*Period Obligations*  
 07/01/74-12/31/85 FY85: \$11,262 TOTAL: \$444,745  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Rock, M. GSFC/Tasevoli, C. M. 12-Chemistry  
 Kunigahalli, V. GSFC/Ford, F. E.

**NAG 5-499 Bowie State College 2876**  
 Power spectral estimation algorithms for oceanographic applications  
*Period Obligations*  
 02/01/85-01/31/86 FY85: \$88,020 TOTAL: \$88,020  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bhatia, M. S. GSFC/Bonavito, N. L. 29-Math/Computer, NEC

**NAG 1-211 Johns Hopkins University 2883**  
 Ultrasonic and optical evaluation of surgical implant materials and devices  
*Period Obligations*  
 09/01/81-08/31/86 FY85: \$34,119 TOTAL: \$129,119  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Green, R. E., Jr. LARC/Heyman, J. S. 47-Materials Engr  
 Wagner, J. W. LARC/Crantrell, J. H., Jr.

**NASA'S UNIVERSITY PROGRAM  
MARYLAND (Continued)**

<b>NAG 1-399</b>	<b>Johns Hopkins University</b>		<b>2884</b>
	Microstructures and properties of rapidly solidified alloys		
	<i>Period</i>	<i>Obligations</i>	
	08/10/83-04/09/86	FY85: \$60,000 TOTAL: \$128,470	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Shechtman, D.	LARC/Lisagor, W. B.	47-Materials Engr
	Horowitz, E.	LARC/Brewer, W. D.	
<b>NAG 1-484</b>	<b>Johns Hopkins University</b>		<b>2885</b>
	A finite element analysis of jandr curves for metallic materials materials		
	<i>Period</i>	<i>Obligations</i>	
	05/30/84-05/31/86	FY85: \$29,945 TOTAL: \$44,945	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Douglas, A. S.	LARC/Newman, J. C.	46-Mech Engr
		LARC/Elber, W.	
<b>NAG 1-504</b>	<b>Johns Hopkins University</b>		<b>2886</b>
	Heterodyne interferometry for detection of narrow band ultrasonic vibrations		
	<i>Period</i>	<i>Obligations</i>	
	09/01/84-08/31/85	FY85: TOTAL: \$50,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Wagner, J. W.	LARC/Heyman, J. S.	13-Physics
		LARC/Cantrell, J. H., Jr.	
<b>NAG 1-526</b>	<b>Johns Hopkins University</b>		<b>2887</b>
	Closure measurements of short fatigue cracks		
	<i>Period</i>	<i>Obligations</i>	
	10/11/84-10/10/85	FY85: \$57,258 TOTAL: \$57,258	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Sharpe, W. N., Jr.	LARC/Newman, J. C., Jr.	46-Mech Engr
		LARC/Phillips, E. P.	
<b>NAG 2-139</b>	<b>Johns Hopkins University</b>		<b>2888</b>
	Behavioral and biological interactions with small groups in confined microsocieties		
	<i>Period</i>	<i>Obligations</i>	
	11/01/81-10/31/85	FY85: \$95,750 TOTAL: \$384,180	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Brady, J. V.	ARC/Patton, R. M.	62-Social Aspects
	Emurian, H. H.		
<b>NAG 2-356</b>	<b>Johns Hopkins University</b>		<b>2889</b>
	A search for infrared molecular emissions from comet Halley using the Fourier transform spectrometer on the Kuiper Airborne Observatory		
	<i>Period</i>	<i>Obligations</i>	
	07/01/85-06/31/86	FY85: \$33,700 TOTAL: \$33,700	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Weaver, H. A., Jr.	ARC/Haughney, L. C.	11-Astronomy
<b>NAG 5-32</b>	<b>Johns Hopkins University</b>		<b>2890</b>
	Interpretation and delineation of the Earth's gravity field		
	<i>Period</i>	<i>Obligations</i>	
	04/01/80-04/30/86	FY85: \$45,000 TOTAL: \$252,013	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Marsh, B. D.	GSFC/Welker, J.	32-Geological Sci
	Fisher, G. W.		
<b>NAG 5-200</b>	<b>Johns Hopkins University</b>		<b>2891</b>
	Application of mixed physical statistical models		
	<i>Period</i>	<i>Obligations</i>	
	08/01/81-12/31/84	FY85: TOTAL: \$176,523	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Phillips, O. M.	GSFC/Susskind, J.	31-Atmos Sci
	Munteanu, M. J.		
<b>NAG 5-327</b>	<b>Johns Hopkins University</b>		<b>2892</b>
	Optical studies of potential spectroscopic instruments		
	<i>Period</i>	<i>Obligations</i>	
	06/01/83-11/30/85	FY85: TOTAL: \$37,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Moos, H. W.	GSFC/Bogges, A.	11-Astronomy
<b>NAG 5-356</b>	<b>Johns Hopkins University</b>		<b>2893</b>
	Optical communication with laser diode arrays		
	<i>Period</i>	<i>Obligations</i>	
	08/01/83-12/31/85	FY85: \$73,867 TOTAL: \$112,395	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Davidson, F. M.	GSFC/Fuhr, P. L.	45-Elec Engr
		GSFC/Caudill, L. O.	
<b>NAG 5-435</b>	<b>Johns Hopkins University</b>		<b>2894</b>
	Variability time scale of H lyman alpha from uronus		
	<i>Period</i>	<i>Obligations</i>	
	07/01/84-07/31/85	FY85: \$5,000 TOTAL: \$11,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Durrance, S. T.	GSFC/Kondo, Y.	11-Astronomy
	Clarke, J. T.		
<b>NAG 5-489</b>	<b>Johns Hopkins University</b>		<b>2895</b>
	Research relative to middle atmosphere modeling		
	<i>Period</i>	<i>Obligations</i>	
	12/01/84-11/30/85	FY85: \$30,000 TOTAL: \$30,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Strobel, D. E.	GSFC/Kaye, J.	31-Atmos Sci
		GSFC/Schoeberl, M. R.	
<b>NAG 5-531</b>	<b>Johns Hopkins University</b>		<b>2896</b>
	Petrogenesis and tectonics of the nephelinite carbonstite magmatic association		
	<i>Period</i>	<i>Obligations</i>	
	05/01/85-04/30/86	FY85: \$8,865 TOTAL: \$8,865	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Marsh, B. D.	GSFC/Walter, L. S.	32-Geological Sci
	Peterson, T. D.	GSFC/Walter, L. S.	
<b>NAG 5-619</b>	<b>Johns Hopkins University</b>		<b>2897</b>
	Rocket and laboratory experiments in aeronomy and astronomy		
	<i>Period</i>	<i>Obligations</i>	
	03/01/83-02/28/86	FY85: \$640,000 TOTAL: \$1,590,000	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Feldman, P. D.	GSFC/Early, L. J.	13-Physics
	Davidson, A. F.	GSFC/Pless, R. H.	
	Fastie, W. G.		

**NASA'S UNIVERSITY PROGRAM**  
**MARYLAND (Continued)**

**NAG 5-701**                      **Johns Hopkins University**                      **2898**  
 An oxygen rich supernova remnant in the small magellonic cloud

<i>Period</i>	<i>Obligations</i>	
09/01/85-08/31/86	FY85: \$10,700	TOTAL: \$10,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Blair, W. P.	GSFC/Kondo, Y.	11-Astronomy
Raymond, J. C.		

**NAGW 574**                      **Johns Hopkins University**                      **2905**  
 Radar scattering of the ocean surface: A variational approach

<i>Period</i>	<i>Obligations</i>	
01/01/85-12/31/85	FY85: \$150,000	TOTAL: \$240,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gray, E. P.	HQ-EE/Patzert, W. C.	33-Oceanography
Bird, J. F.	HQ-EE/Wilson, W. S.	

**NAGW 154**                      **Johns Hopkins University**                      **2899**  
 Investigation of composition and dynamics of the Jovian magnetosphere

<i>Period</i>	<i>Obligations</i>	
03/15/81-10/31/84	FY85:	TOTAL: \$515,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Krimigis, S. M.	HQ-EL/Quaide, W. L.	13-Physics
	HQ-EL/Evans, N.	

**NAGW 648**                      **Johns Hopkins University**                      **2906**  
 Planetary aeronomy

<i>Period</i>	<i>Obligations</i>	
09/01/84-08/31/85	FY85:	TOTAL: \$80,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Strobel, D. F.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 264**                      **Johns Hopkins University**                      **2900**  
 Analysis of thermal iron ions measured in the peaks of solar wind streams

<i>Period</i>	<i>Obligations</i>	
02/01/82-01/01/85	FY85:	TOTAL: \$130,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roelof, E. C.	HQ-EE/Lynch, J. T.	19-Phys Sci, NEC
	HQ-EE/Shawhan, S. D.	

**NAS 5-23732**                      **Johns Hopkins University**                      **2907**  
 Development of a command system for a fully implantable human tissue stimulator

<i>Period</i>	<i>Obligations</i>	
10/26/76-02/28/85	FY85:	TOTAL: \$525,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Long, D.	GSFC/Friedman, D. S.	
Fishell, R. E.		56-Medical Sciences

**NAGW 383**                      **Johns Hopkins University**                      **2901**  
 Studies of planetary external atmospheres

<i>Period</i>	<i>Obligations</i>	
10/15/82-10/14/84	FY85:	TOTAL: \$103,216
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brown, R. A.	HQ-EL/Brunk, W. E.	11-Astronomy

**NAS 5-25358**                      **Johns Hopkins University**                      **2908**  
 Grating facility use

<i>Period</i>	<i>Obligations</i>	
10/01/78-12/31/86	FY85:	TOTAL: \$68,200
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fastie, W. G.	GSFC/Fowler, W. S.	13-Physics

**NAGW 425**                      **Johns Hopkins University**                      **2902**  
 Wind erosion of frozen slopes and dune formation

<i>Period</i>	<i>Obligations</i>	
02/15/83-02/14/85	FY85:	TOTAL: \$23,809
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Marsh, B. D.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAS 5-26848**                      **Johns Hopkins University**                      **2909**  
 Multi-spectral auroral imaging device for OPEN (origin of plasmas in the Earth's neighborhood)

<i>Period</i>	<i>Obligations</i>	
12/20/82-09/30/85	FY85:	TOTAL: \$218,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Feldman, P. D.	GSFC/O'Brien, J. J.	19-Phys Sci, NEC

**NAGW 497**                      **Johns Hopkins University**                      **2903**  
 Study of magnetosphere structure and linear magnetosphere storm effects

<i>Period</i>	<i>Obligations</i>	
07/01/83-09/30/86	FY85: \$60,000	TOTAL: \$110,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Williams, D. J.	HQ-EE/Behannon, K. W.	13-Physics
Spenser, T. W.	HQ-EE/Shawhan, S. D.	
Lyons, L. R.		

**NAS 5-27000**                      **Johns Hopkins University**                      **2910**  
 Development phase of the Hopkins ultraviolet telescope (HUT)

<i>Period</i>	<i>Obligations</i>	
09/21/81-10/31/88	FY85: \$2,719,500	TOTAL: \$11,624,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Davidson, A.	MSFC/Owens, J. H.	11-Astronomy

**NAGW 522**                      **Johns Hopkins University**                      **2904**  
 Study of a solar magnetograph

<i>Period</i>	<i>Obligations</i>	
12/01/83-11/30/85	FY85: \$111,000	TOTAL: \$199,300
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rust, D.	HQ-EZ/Spicer, D. S.	13-Physics

**NAS 8-32903**                      **Johns Hopkins University**                      **2911**  
 Scientific investigations in support of the space telescope project

<i>Period</i>	<i>Obligations</i>	
02/01/78-06/30/86	FY85: \$20,000	TOTAL: \$202,040
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fastie, W. G.	MSFC/O'dell, C. R.	11-Astronomy

**NASA'S UNIVERSITY PROGRAM  
MARYLAND (Continued)**

<b>NAS 8-35348</b>	<b>Johns Hopkins University</b>	<b>2912</b>
Fiber optical quadrature study		
<i>Period</i>	<i>Obligations</i>	
03/24/83-05/18/86	FY85:	TOTAL: \$705,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fastie, W. G.	MSFC/Humphreys, J. T.	11-Astronomy

<b>NAS 9-16703</b>	<b>Johns Hopkins University</b>	<b>2913</b>
Bedrest in healthy women: Effects of menstrual function and oral contraceptives		
<i>Period</i>		<i>Obligations</i>
07/01/82-07/31/84	FY85:	TOTAL: \$213,300
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fortney, S. M.	JSC/Logan, J.	51-Biological Sci

<b>NAS 9-17199</b>	<b>Johns Hopkins University</b>	<b>2914</b>
Bedrest in healthy women: Effects of menstrual function and oral contraceptives		
<i>Period</i>	<i>Obligations</i>	
08/01/84-01/01/86	FY85: \$83,000	TOTAL: \$83,000
<i>Pnn. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Forney, S.	JSC/Logan, J. S.	56-Medical Sciences

<b>NASW 3691</b>	<b>Johns Hopkins University</b>	<b>2915</b>
Space telescope historical project		
<i>Period</i>	<i>Obligations</i>	
11/15/82-02/28/87	FY85: \$40,000	TOTAL: \$142,545
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kargon, R. H.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

<b>NCC 5-24</b>	<b>Johns Hopkins University</b>	<b>2916</b>
<b>Dye laser traveling wave amplifier research</b>		
<i>Period</i>	<i>Obligations</i>	
12/01/80-12/31/84	FY85:	TOTAL: \$169,026
<i>Prin. invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gaward, S.	GSFC/Middleton, E. M.	49-Engr, NEC

<b>NGT 21-001-801</b>	<b>Johns Hopkins University</b>	<b>2917</b>
<b>NASA graduate student researchers program</b>		
<i>Period</i>	<i>Obligations</i>	
09/01/83-08/31/86	FY85:	TOTAL: \$24,960
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Robinson, D. W.	HQ-LB/Owens, F. C.	12-Chemistry

<b>NGT 21-001-802</b>	<b>Johns Hopkins University</b>	<b>2918</b>
NASA graduate student researchers program		
<i>Period</i>	<i>Obligations</i>	
09/01/84-08/31/86	FY85: \$18,000	TOTAL: \$33,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Green, R.	HQ-LB/Owens, F. C.	47-Materials Engr

<b>NSG 1442</b>	<b>Johns Hopkins University</b>	<b>2919</b>
Intermittent/transient faults in computer based system		
<i>Period</i>	<i>Obligations</i>	
09/15/77-09/30/85	FY85:	TOTAL: \$519,987
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Masson, G. E.	LARC/Pitts, F. L.	45-Elec Engr
	LARC/Belcastro, C. M.	

<b>NSG 5393</b>	<b>Johns Hopkins University</b>	<b>2920</b>
Studies of the ultraviolet spectra of astronomical sources		
<i>Period</i>	<i>Obligations</i>	
07/01/79-03/31/86	FY85: \$89,200	TOTAL: \$366,452
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Moos, H. W.	GSFC/Kondo, Y.	11-Astronomy
Weaver, H. A.		
A'hearn, M. F.		

<b>NSG 7055</b>	<b>Johns Hopkins University</b>	<b>2921</b>
Satellite data analysis		
<i>Period</i>	<i>Obligations</i>	
01/01/74-12/31/85	FY85: \$115,000	TOTAL: \$994,040
<i>Pnn. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Potemra, T. A.	HQ-EE/Lynch, J. T.	13-Physics
	HQ-EE/Shawhan, S. D.	

<b>NAG 5-392</b>	<b>Morgan State University</b>	<b>2922</b>
A magnetominernd study of exsolation in titanomagnetites		
<i>Period</i>	<i>Obligations</i>	
02/01/84-09/30/85	FY85:	TOTAL: \$94,388
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Isuk, E. E.	GSFC/Wasilewski, P. J.	
	GSFC/Steif, L. J.	32-Geological Sci

<b>NAS 5-23558</b>	<b>Morgan State University</b>	<b>2923</b>
The investigation, identification, analysis and interpretation of new possibilities in transfer technology		
<i>Period</i>	<i>Obligations</i>	
06/01/76-07/30/85	FY85:	TOTAL: \$158,360
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Taylor, J. H.	GSFC/Friedman, D. S.	49-Engr, NEC

<b>NCA 5-104</b>	<b>Morgan State University</b>	<b>2924</b>
Technology transfer		
<i>Period</i>	<i>Obligations</i>	
06/06/85-05/31/86	FY85: \$21,967	TOTAL: \$21,967
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Taylor, J.	GSFC/Friedmen, D. S.	99-Multi-Discip

<b>NCA 5-105</b>		<b>Morgan State University</b>	<b>2925</b>
Engineering enrichment program			
<i>Period</i>	<i>Obligations</i>		
06/26/85-04/30/86	FY85: \$60,000	TOTAL: \$60,000	
<i>Prin. Invest</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Leigh, P.	GSFC/Chapman, J. W.	49-Engr, NEC	

<b>NGT 21-025-080</b>	<b>Morgan State University</b>	<b>2926</b>
The 10th summer research participation program		
<i>Period</i>	<i>Obligations</i>	
04/01/80-08/02/85	FY85: \$59,000	TOTAL: \$354,855
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Proctor, N. K.	HQ-U/Coleman, A. M.	49-Engr, NEC
	GSFC/Mundy, J.	



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**NSG 5074 Morgan State University 2927**  
 Research calibration of photographic and spectrographic films  
*Period Obligations*  
 10/01/75-12/31/85 FY85: \$200,000 TOTAL: \$566,976  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hammond, E. C., Jr. GSFC/Baker, G. R. 11-Astronomy

**NAG 5-509 University of Maryland - Baltimore 2928**  
 High resolution spectroscopy of carbon dioxide lineshapes  
*Period Obligations*  
 03/01/85-02/28/86 FY85: \$31,000 TOTAL: \$31,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Strow, L. L. GSFC/Gentry, B. 13-Physics  
 GSFC/Korb, C. L.

**NAS 9-17186 University of Maryland - Baltimore 2929**  
 Computerized physiological parameters  
*Period Obligations*  
 08/01/84-08/01/86 FY85: \$146,000 TOTAL: \$216,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Siegel, J. H. JSC/Logan, J. S. 56-Medical Sciences  
 JSC/Reynolds, M.

**NAG 2-100 Univ of Maryland Baltimore Profsnl School 2930**  
 Gonadal steroids and muscle atrophy  
*Period Obligations*  
 01/15/81-06/30/86 FY85: \$74,722 TOTAL: \$226,841  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Max, S. R. ARC/Ellis, S. 51-Biological Sci  
 Bernard, P. A.

**NAG 1-364 University of Maryland - College Park 2931**  
 Aerosol chemistry during the NASA global troposphere experiment aircraft sampling experiments  
*Period Obligations*  
 06/08/83-06/07/84 FY85: TOTAL: \$25,588  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Zoller, W. H. LARC/Harriss, R. C. 31-Atmos Sci  
 LARC/Mugler, J. P.

**NAG 1-375 University of Maryland - College Park 2932**  
 Gust response of articulated and hingeless rotors in hover and forward flight  
*Period Obligations*  
 06/01/83-10/31/85 FY85: TOTAL: \$131,540  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Chopra, I. LARC/Mantay, W. R. 41-Aero Engr

**NAG 1-473 University of Maryland - College Park 2933**  
 Investigation of flow and heating on reusable surface insulating tiles  
*Period Obligations*  
 04/15/84-04/14/86 FY85: \$25,107 TOTAL: \$50,077  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jones, E. LARC/Hunt, L. R. 46-Mech Engr

**NAG 1-546 University of Maryland - College Park 2934**  
 Studies of fundamental problems in hypersonic aerodynamics  
*Period Obligations*  
 12/01/84-11/30/85 FY85: \$73,000 TOTAL: \$73,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Anderson, J. D., Jr. LARC/Sawyer, W. C. 19-Phys Sci, NEC  
 Kothari, A. P. LARC/Johnston, P. J.

**NAG 1-582 University of Maryland - College Park 2935**  
 A study of data compression techniques with applications to image coding  
*Period Obligations*  
 09/01/85-08/31/86 FY85: \$72,708 TOTAL: \$72,708  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Farvardin, N. LARC/Fales, C. L. 45-Elec Engr

**NAG 2-270 University of Maryland - College Park 2936**  
 Properties of large nearly perfect crystals at very low temperatures  
*Period Obligations*  
 01/01/84-05/31/86 FY85: \$40,000 TOTAL: \$80,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Richard, J. P. ARC/Kittel, P. 13-Physics  
 Weber, J.  
 Nelson, R. A.

**NAG 3-192 University of Maryland - College Park 2937**  
 Characterization studies of deposits formed from thermally stressed jet fuels  
*Period Obligations*  
 09/01/81-02/28/86 FY85: TOTAL: \$231,080  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Adler, I. LERC/Seng, G. T. 12-Chemistry

**NAG 3-470 University of Maryland - College Park 2938**  
 Light scattering tests of fundamental theories of transport properties in the critical region  
*Period Obligations*  
 09/05/83-12/03/84 FY85: TOTAL: \$94,945  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Gammon, R. W. LERC/Chai, A. T. 31-Atmos Sci

**NAG 3-638 University of Maryland - College Park 2939**  
 Light scattering tests of fundamental theories of transport properties in the critical region  
*Period Obligations*  
 05/01/85-12/01/85 FY85: \$30,000 TOTAL: \$30,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Gammon, R. W. LERC/Chai, A. T. 13-Physics

**NAG 5-9 University of Maryland - College Park 2940**  
 Research relative to the development of hydrologic models for remote sensing technology  
*Period Obligations*  
 02/01/80-06/30/84 FY85: TOTAL: \$675,434  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Ragan, R. M. GSFC/Rango, A. 44-Civil Engr  
 GSFC/Salomonson, V. V.

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**NAG 5-135 University of Maryland - College Park 2941**  
 Energetic particle acceleration in solar flares

<i>Period</i>	<i>Obligations</i>	
01/01/81-12/31/85	FY85:	TOTAL: \$275,840
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chang, C. C.	GSFC/Jones, F. C.	13-Physics
Holmgren, H. D.		

**NAG 5-244 University of Maryland - College Park 2948**  
 Studies of non-fragmentary ionization processes for the mass spectrometry of comets

<i>Period</i>	<i>Obligations</i>	
06/15/82-02/28/86	FY85:	TOTAL: \$63,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Coplan, M. A.	GSFC/Ogilvie, K. W.	13-Physics

**NAG 5-169 University of Maryland - College Park 2942**  
 Measurement of interstellar helium impinging on the Earth

<i>Period</i>	<i>Obligations</i>	
04/15/81-10/31/85	FY85: \$27,765	TOTAL: \$60,664
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Moore, J.	GSFC/Early, L. J.	13-Physics
Opal, C. B.	GSFC/Pless, R. H.	
Meir, R. R.		

**NAG 5-245 University of Maryland - College Park 2949**  
 Planetary studies through interpretation of satellite data

<i>Period</i>	<i>Obligations</i>	
06/15/82-03/31/86	FY85: \$73,000	TOTAL: \$379,337
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Trasco, J. D.	GSFC/Frey, H. V.	32-Geological Sci
Kindu, M. R.		

**NAG 5-203 University of Maryland - College Park 2943**  
 Satellite sensing of air pollution and ground signatures

<i>Period</i>	<i>Obligations</i>	
09/01/81-07/15/86	FY85: \$101,969	TOTAL: \$364,125
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pinker, R. T.	GSFC/Fraser, R. S.	31-Atmos Sci
Kaufman, Y. J.	GSFC/Arking, A.	

**NAG 5-252 University of Maryland - College Park 2950**  
 Satellite observations of distant dusty comets

<i>Period</i>	<i>Obligations</i>	
07/01/82-08/31/85	FY85: \$21,503	TOTAL: \$46,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
A'hearn, M. F.	GSFC/Kondo, Y.	11-Astronomy
Millis, R. L.		
Schleicher, D. G.		

**NAG 5-215 University of Maryland - College Park 2944**  
 Dynamics of planetary waves and seasonal climate variations

<i>Period</i>	<i>Obligations</i>	
11/15/81-05/31/85	FY85:	TOTAL: \$232,893
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rodenhuis, D. R.	GSFC/Suarez, M.	31-Atmos Sci

**NAG 5-263 University of Maryland - College Park 2951**  
 Investigation of radio frequency high waveguide laser

<i>Period</i>	<i>Obligations</i>	
08/01/82-03/31/86	FY85: \$40,000	TOTAL: \$190,441
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
A'hearn, M. F.	GSFC/Degnan, J. J.	49-Engr, NEC

**NAG 5-216 University of Maryland - College Park 2945**  
 Thermodynamic and spectroscopic studies relevant to a Jovian satellite

<i>Period</i>	<i>Obligations</i>	
01/15/82-03/14/86	FY85: \$15,816	TOTAL: \$99,208
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Khanna, R. K.	GSFC/Pearl, J. C.	11-Astronomy

**NAG 5-292 University of Maryland - College Park 2952**  
 Structure fidelity of satellite temperature soundings

<i>Period</i>	<i>Obligations</i>	
01/15/83-02/14/85	FY85:	TOTAL: \$160,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Thompson, O. E.	GSFC/Susskind, J.	31-Atmos Sci

**NAG 5-222 University of Maryland - College Park 2946**  
 High resolution spectroscopy of the oxygen molecule

<i>Period</i>	<i>Obligations</i>	
03/01/82-10/31/84	FY85:	TOTAL: \$49,766
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilkerson, T. D.	GSFC/Gentry, B. M.	12-Chemistry
	GSFC/Strow, L. L.	

**NAG 5-309 University of Maryland - College Park 2953**  
 Improvement of the radiative routines in the GLAS general circulation model (Goddard Laboratory for atmospheric sciences)

<i>Period</i>	<i>Obligations</i>	
03/15/83-04/14/86	FY85: \$64,964	TOTAL: \$227,090
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Baer, F.	GSFC/Thiele, O. W.	31-Atmos Sci
Harshvardan		

**NAG 5-235 University of Maryland - College Park 2947**  
 Research relative to a uniform access to distributed heterogeneous databases

<i>Period</i>	<i>Obligations</i>	
06/01/82-03/31/86	FY85: \$60,006	TOTAL: \$282,274
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tripathi, S. K.	GSFC/Smith, P. H.	22-Computer Science
	GSFC/Berbert, J. H.	

**NAG 5-323 University of Maryland - College Park 2954**  
 Research relative to laser wavemeter-spectrometer techniques

<i>Period</i>	<i>Obligations</i>	
05/15/83-03/31/86	FY85: \$50,000	TOTAL: \$74,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilkerson, T. D.	GSFC/Dombrowski, M.	49-Engr, NEC
Cotnoir, L. J.	GSFC/Schwemmer, G. K.	

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**NAG 5-368 University of Maryland - College Park 2955**  
 Research in requirements and software design

<i>Period</i>	<i>Obligations</i>	
09/01/83-08/31/86	FY85: \$245,000	TOTAL: \$344,567
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Basili, V. R.	GSFC/McGarry, F. E.	
	22-Computer Science	
Zelkowitz, M. K.	GSFC/Tasaki, K. K.	

**NAG 5-383 University of Maryland - College Park 2956**  
 Modeling of interactions between biosphere and atmosphere and the global scale

<i>Period</i>	<i>Obligations</i>	
01/01/84-12/31/85	FY85: \$245,937	TOTAL: \$358,036
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Baer, F.	GSFC/Sud, Y.	31-Atmos Sci
Mintz, Y.		

**NAG 5-395 University of Maryland - College Park 2957**  
 Improved integration of remote sensing into continuous water bolona models

<i>Period</i>	<i>Obligations</i>	
02/15/84-02/14/85	FY85:	TOTAL: \$84,070
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ragan, R.	GSFC/Qurney, R.	39-Env Sci, NEC

**NAG 5-396 University of Maryland - College Park 2958**  
 System characterization of a magnetically suspended flywheel

<i>Period</i>	<i>Obligations</i>	
02/15/84-12/31/86	FY85: \$250,000	TOTAL: \$403,859
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kirk, J. A.	GSFC/Rodriguez, G. E.	46-Mech Engr
Anand, D. K.	GSFC/Ford, F. E.	

**NAG 5-399 University of Maryland - College Park 2959**  
 Investigation of computer aided techniques for mapping large-scale and small-scale vegetation boundaries

<i>Period</i>	<i>Obligations</i>	
04/01/84-06/30/86	FY85: \$63,500	TOTAL: \$168,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Justice, C. O.	GSFC/Tucker, C. J.	31-Atmos Sci

**NAG 5-409 University of Maryland - College Park 2960**  
 Parameterization of the cloud fraction near stratocumulus top

<i>Period</i>	<i>Obligations</i>	
07/01/84-06/30/85	FY85:	TOTAL: \$16,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Randall, D. A.	GSFC/Randall, D. A.	31-Atmos Sci

**NAG 5-413 University of Maryland - College Park 2961**  
 Oscillator technology for sub millimeter receivers

<i>Period</i>	<i>Obligations</i>	
04/01/84-12/31/85	FY85: \$26,830	TOTAL: \$72,434
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Davis, C. C.	GSFC/Petuchowski, S. J.	45-Elec Engr
Ho, P. T.	GSFC/Buhl, D.	
Striffler, C. D.		

**NAG 5-422 University of Maryland - College Park 2962**  
 Design study for a high sensitivity electron spectrometer

<i>Period</i>	<i>Obligations</i>	
07/01/84-12/31/85	FY85: \$25,000	TOTAL: \$50,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Coplan, M. A.	GSFC/Hoffman, R. A.	13-Physics
Moore, J. H.		

**NAG 5-430 University of Maryland - College Park 2963**  
 Effects of stellar winds on planetary nebulae

<i>Period</i>	<i>Obligations</i>	
07/01/84-06/30/86	FY85:	TOTAL: \$3,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Harrington, J. P.	GSFC/Kondo, Y.	11-Astronomy

**NAG 5-454 University of Maryland - College Park 2964**  
 Study of selected radiations at high altitudes above the auroral

<i>Period</i>	<i>Obligations</i>	
07/15/84-07/14/86	FY85:	TOTAL: \$35,489
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wu, C. S.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

**NAG 5-492 University of Maryland - College Park 2965**  
 Formulation of a biospheres model for use within general circulation models

<i>Period</i>	<i>Obligations</i>	
02/01/85-01/31/86	FY85: \$77,000	TOTAL: \$77,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shukla, J.	GSFC/Schmugge, T. J.	31-Atmos Sci
Sellers, P.		

**NAG 5-511 University of Maryland - College Park 2966**  
 Very large array and westerbrook observations in support of Solar Maximum Mission experiments

<i>Period</i>	<i>Obligations</i>	
03/01/85-02/28/86	FY85: \$35,000	TOTAL: \$35,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kundu, M. R.	GSFC/Bullock, G. D.	11-Astronomy
Schmahl, E. J.		

**NAG 5-512 University of Maryland - College Park 2967**  
 Hydrologic component of the pilot load data system

<i>Period</i>	<i>Obligations</i>	
03/01/85-02/28/86	FY85: \$30,000	TOTAL: \$30,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ragan, R. M.	GSFC/Price, R. D.	29-Math/Cmputer, NEC

**NAG 5-542 University of Maryland - College Park 2968**  
 Research regarding the feasibility of estimating rainfall from space

<i>Period</i>	<i>Obligations</i>	
05/15/85-05/14/86	FY85: \$49,054	TOTAL: \$49,054
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Thompson, O. E.	GSFC/Meneghini, R.	31-Atmos Sci
Atlas, D.		

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**NAG 5-579 University of Maryland - College Park 2969**  
 Analysis of the results of the ion composition instrument

Period	Obligations	
07/01/85-06/30/86	FY85: \$79,500	TOTAL: \$79,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Coplan, M. A.	GSFC/Ogilvie, K. W.	13-Physics

**NAG 5-589 University of Maryland - College Park 2970**  
 Ultraviolet observations of subdwarfs and globular cluster studies

Period	Obligations	
07/15/85-07/14/86	FY85: \$22,800	TOTAL: \$22,800
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bell, R. A.	GSFC/Kondo, Y.	11-Astronomy

**NAG 5-705 University of Maryland - College Park 2971**  
 Research relative to the IMP ion and electron experiment data

Period	Obligations	
10/01/85-09/30/86	FY85: \$20,000	TOTAL: \$20,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gloeckler, G.	GSFC/Wales, R. O.	11-Astronomy

**NAG 5-716 University of Maryland - College Park 2972**  
 Scientific analysis of data from the charge energy mass spectrometer

Period	Obligations	
10/01/85-10/31/85	FY85: \$10,000	TOTAL: \$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gloeckler, G.	GSFC/Acuna, M. H.	13-Physics
Hamilton, D.		
Ipavich, F.		

**NAG 8-462 University of Maryland - College Park 2973**  
 Spatially extended X-ray emission in active galaxies

Period	Obligations	
11/01/83-10/31/85	FY85:	TOTAL: \$7,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilson, A. S.	MSFC/Johnson, W. G.	11-Astronomy

**NAG 8-486 University of Maryland - College Park 2974**  
 Spectrophotometry of comet Halley using Astro-1 payload

Period	Obligations	
07/01/84-09/30/85	FY85:	TOTAL: \$78,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
A'hearn, M. F.	MSFC/Owens, J. H., Jr.	11-Astronomy

**NAG 8-506 University of Maryland - College Park 2975**  
 Terrestrial upper atmosphere density measurement by X-ray source occultation

Period	Obligations	
01/01/85-12/31/85	FY85: \$11,500	TOTAL: \$11,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Matthews, D. L.	MSFC/Johnson, W. G.	11-Astronomy

**NAG 8-529 University of Maryland - College Park 2976**  
 Studies of radio jets and the narrow line regions of active galaxies with the AXAF

Period	Obligations	
05/01/85-03/15/87	FY85: \$38,900	TOTAL: \$38,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilson, A. S.	MSFC/Dailey, C. C.	11-Astronomy

**NAGW 33 University of Maryland - College Park 2977**  
 A program to develop remote sensing excellence

Period	Obligations	
03/01/80-02/28/86	FY85: \$125,000	TOTAL: \$750,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ragan, R. M.	HQ-ET/Tuyahov, A. J.	39-Env Sci, NEC

**NAGW 81 University of Maryland - College Park 2978**  
 A study of discontinuities and radiation processes in solar terrestrial plasmas

Period	Obligations	
06/01/80-04/30/86	FY85: \$360,000	TOTAL: \$1,787,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Papadopoulos, K.	HQ-EE/Butler, D. M.	39-Env Sci, NEC
Wu, C. S.	HQ-EE/Hudson, R. D.	

**NAGW 101 University of Maryland - College Park 2979**  
 Thermal and suprathreshold ion composition studies close to the Sun

Period	Obligations	
10/01/80-01/31/86	FY85: \$115,000	TOTAL: \$565,670
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gloeckler, G.	HQ-EZ/Spicer, D. S.	13-Physics

**NAGW 415 University of Maryland - College Park 2980**  
 Solar Maximum Mission workshop

Period	Obligations	
02/01/83-12/31/85	FY85:	TOTAL: \$107,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kundu, M.	HQ-EZ/Chipman, E.	13-Physics

**NAGW 483 University of Maryland - College Park 2981**  
 Unstable current system and plasma instabilities in astrophysics

Period	Obligations	
07/01/83-12/31/84	FY85:	TOTAL: \$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kundu, M. R.	HQ-EZ/Chipman, E.	13-Physics

**NAGW 557 University of Maryland - College Park 2982**  
 Climate observing system simulation studies

Period	Obligations	
12/19/83-03/18/86	FY85: \$200,000	TOTAL: \$440,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shukla, J.	HQ-EE/Schiffer, R. A.	31-Atmos Sci
	HQ-EE/Thompson, D. E.	

**NAGW 558 University of Maryland - College Park 2983**  
 U.S. India cooperative research on monsoon variability

Period	Obligations	
12/19/83-03/18/86	FY85: \$119,998	TOTAL: \$232,683
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shukla, J.	HQ-EE/Curran, R. J.	31-Atmos Sci
	HQ-EE/Theon, J. S.	

**NASA'S UNIVERSITY PROGRAM**  
**MARYLAND (Continued)**

**NAGW 562 University of Maryland - College Park 2984**  
Asteroid composition and meteorite origin as determined from reflectance spectroscopy

<i>Period</i>	<i>Obligations</i>	
02/15/84-12/14/85	FY85: \$30,000	TOTAL: \$55,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McFadden, L. A.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAGW 637 University of Maryland - College Park 2985**  
Analysis of Voyager infrared data on Titan

<i>Period</i>	<i>Obligations</i>	
07/15/84-08/31/86	FY85: \$9,000	TOTAL: \$53,823
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Khanna, R. K.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Quaide, W. L.	

**NAGW 673 University of Maryland - College Park 2986**  
Simulation of chemical evolution in comets

<i>Period</i>	<i>Obligations</i>	
11/01/84-10/31/85	FY85: \$19,911	TOTAL: \$19,911
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ponnamperuma, C.	HQ-EB/Devincenzi, D. L.	12-Chemistry
	HQ-EB/Rambler, M. B.	

**NAS 5-25472 University of Maryland - College Park 2987**  
International Sun-Earth Explorer 3 data interpretation services

<i>Period</i>	<i>Obligations</i>	
01/29/79-06/30/85	FY85:	TOTAL: \$222,513
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Coplan, M. A.	GSFC/Ogilvie, K. W.	11-Astronomy

**NAS 5-25486 University of Maryland - College Park 2988**  
Support to the space telescope wide field planetary camera development team

<i>Period</i>	<i>Obligations</i>	
02/01/79-12/31/83	FY85:	TOTAL: \$129,047
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Currie, D. S.	GSFC/Fellerman, K.	31-Atmos Sci

**NAS 5-25735 University of Maryland - College Park 2989**  
Interplanetary monitoring of platform-H and J spacecraft ion and electron experiment

<i>Period</i>	<i>Obligations</i>	
11/01/79-09/30/84	FY85:	TOTAL: \$368,081
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gloecker, G.	GSFC/Wales, R. O.	11-Astronomy

**NAS 5-25764 University of Maryland - College Park 2990**  
Perform research in natural human to machine interfaces for NASA mission operations data systems

<i>Period</i>	<i>Obligations</i>	
06/29/79-10/09/85	FY85: \$94,542	TOTAL: \$391,071
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rieger, C. S.	GSFC/Truskowski, W.	99-Multi-Discip
Somet, H.		

**NAS 5-26582 University of Maryland - College Park 2991**  
Study of energetic particle acceleration

<i>Period</i>	<i>Obligations</i>	
05/08/81-01/30/85	FY85:	TOTAL: \$39,762
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Eicbler, D. S.	GSFC/Ramaty, R.	13-Physics

**NAS 5-26739 University of Maryland - College Park 2992**  
Nuclear and tonic charge distribution experiment

<i>Period</i>	<i>Obligations</i>	
10/01/81-11/30/84	FY85:	TOTAL: \$462,890
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gloeckler, G.	GSFC/Wales, R. O.	11-Astronomy

**NAS 5-26856 University of Maryland - College Park 2993**  
Definition studies for the solar wind and superthermal ion composition studies

<i>Period</i>	<i>Obligations</i>	
05/03/82-09/30/86	FY85: \$136,120	TOTAL: \$316,843
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gloeckler, G.	GSFC/O'Brien, J. J.	13-Physics

**NAS 5-26870 University of Maryland - College Park 2994**  
Modeling and theoretical studies in support of origin of plasmas in the Earth's neighborhood (OPEN)

<i>Period</i>	<i>Obligations</i>	
04/23/82-09/30/85	FY85:	TOTAL: \$52,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Papadopoulos, K.	GSFC/O'Brien, J. J.	13-Physics

**NAS 5-27704 University of Maryland - College Park 2995**  
Study and development of a distributed systems approach for sensor data analysis

<i>Period</i>	<i>Obligations</i>	
06/14/83-06/13/84	FY85:	TOTAL: \$74,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Agrawala, A.	GSFC/Howell, D.	31-Atmos Sci
Tripathi, S. K.		

**NAS 5-27724 University of Maryland - College Park 2996**  
Development of prototype self-document/describing system

<i>Period</i>	<i>Obligations</i>	
07/12/83-09/12/85	FY85: \$79,647	TOTAL: \$154,906
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roussopoulos, N.	GSFC/Truskowski, W. F.	49-Engr, NEC

**NAS 5-28150 University of Maryland - College Park 2997**  
Cooperative visitor program

<i>Period</i>	<i>Obligations</i>	
05/04/84-05/04/85	FY85:	TOTAL: \$109,154
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Baer, F.	GSFC/Kreins, E.	31-Atmos Sci

**NAS 5-28180 University of Maryland - College Park 2998**  
Ssuis workshop organization, conduct and reporting

<i>Period</i>	<i>Obligations</i>	
06/27/84-12/15/84	FY85:	TOTAL: \$50,405
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ligomedies, P. A.	GSFC/Coady, R. E.	45-Elec Engr

# **NASA'S UNIVERSITY PROGRAM** **MARYLAND (Continued)**

## **NAS 5-28186 University of Maryland - College Park 2999** Study and development of distributed system approach for sensor data analysis

Period	Obligations	
07/02/84-07/01/85	FY85:	TOTAL: \$75,060
Prin. Invest.	NASA Tech. Officer	CASE Category
Agrawala, A. K.	GSFC/Howell, D. R.	
	22-Computer Science	
Tripathi, S. K.		

## **NAS 5-28439 University of Maryland - College Park 3000** Data reduction and analysis of data monitored from the interplanetary monitoring platform (IMP-8) spacecraft

Period	Obligations	
10/01/84-09/30/85	FY85: \$54,000	TOTAL: \$54,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Gloecker, G.	GSFC/Wales, R. O.	11-Astronomy

## **NAS 5-28704 University of Maryland - College Park 3001** ISEE data reduction and analysis

Period	Obligations	
11/30/84-11/29/85	FY85: \$185,000	TOTAL: \$185,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Gloeckler, G.	GSFC/Wales, R. O.	31-Atmos Sci

## **NAS 5-28732 University of Maryland - College Park 3002** Joint University of Maryland GSFC seminar series

Period	Obligations	
05/10/85-05/10/86	FY85: \$20,000	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ragan, R.	GSFC/Walter, L. S.	39-Env Sci, NEC
	GSFC/Price, R.	

## **NAS 5-29163 University of Maryland - College Park 3003** Cooperative visitors program

Period	Obligations	
05/21/85-05/21/86	FY85: \$87,999	TOTAL: \$87,999
Prin. Invest.	NASA Tech. Officer	CASE Category
Baer, F.	GSFC/Kreins, E. R.	31-Atmos Sci

## **NAS 8-33798 University of Maryland - College Park 3004** Design studies for the shuttle time and frequency transfer experiment

Period	Obligations	
09/12/80-12/31/85	FY85:	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Alley, C. O.	MSFC/Decher, R.	31-Atmos Sci
	MSFC/Duncan, B. J.	

## **NAS 8-33822 University of Maryland - College Park 3005** Development of a superconducting gravity gradiometer

Period	Obligations	
07/23/80-07/22/85	FY85: \$71,000	TOTAL: \$900,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Paik, H. J.	MSFC/Urban, E. W.	31-Atmos Sci
Richard, J. P.	MSFC/Shriver, E. L.	

## **NAS 8-36165 University of Maryland - College Park 3006** Development of a three axis superconducting gravity gradiometer for spacelaunch gravity survey

Period	Obligations	
06/28/85-12/28/87	FY85: \$150,000	TOTAL: \$150,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Paik, H. J.	MSFC/Baugher, C. R.	13-Physics
	MSFC/Strauss, E. M.	

## **NASW 3843 University of Maryland - College Park 3007** Support a colloquium with focus on global habitability and its relationship to the study of chemical evolution

Period	Obligations	
09/30/83-05/01/84	FY85:	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ponnamperuma, C.	HQ-EB/Devincenzi, D. L.	12-Chemistry
	HQ-EB/Rambler, M.	

## **NASW 3978 University of Maryland - College Park 3008** Solar monitor and Auger spectrometer development for remote planetary analysis

Period	Obligations	
11/01/84-10/31/85	FY85: \$19,989	TOTAL: \$19,989
Prin. Invest.	NASA Tech. Officer	CASE Category
Adler, I.	HQ-EL/Vescelus, F.	42-Astro Engr
Coplan, M. A.	HQ-EL/Quaide, W. L.	
Moore, J. H.		

## **NCA 2-420401 University of Maryland - College Park 3009** Studies on the energy transducing atpases from the acidophilic thermophiles

Period	Obligations	
01/01/84-12/31/85	FY85:	TOTAL: \$16,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ponnamperuma, C.	ARC/Hochstein, L. I.	12-Chemistry

## **NCA 5-28 University of Maryland - College Park 3010** Goddard introduction to engineering careers

Period	Obligations	
06/01/78-07/20/86	FY85: \$20,800	TOTAL: \$57,865
Prin. Invest.	NASA Tech. Officer	CASE Category
Newton, J. W.	GSFC/Chapman, J. W.	49-Engr, NEC
	GSFC/Mundy, J. R.	

## **NCC 1-25 University of Maryland - College Park 3011** Investigation of near-infrared differential absorption lidar (dial) techniques for airborne/ spaceborne water vapor profiling

Period	Obligations	
08/01/79-11/30/85	FY85: \$71,297	TOTAL: \$271,297
Prin. Invest.	NASA Tech. Officer	CASE Category
Wilkerson, T. D.	LARC/Browell, E. V.	31-Atmos Sci
	LARC/Carter, A. F.	

## **NCC 1-41 University of Maryland - College Park 3012** Selected applications of computational aerodynamics

Period	Obligations	
05/01/80-09/30/85	FY85:	TOTAL: \$481,415
Prin. Invest.	NASA Tech. Officer	CASE Category
Anderson, J. D.	LARC/Drummond, J. P.	41-Aero Engr
Plotkin, A.	LARC/Dwoyer, D. L.	

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**NCC 5-26 University of Maryland - College Park 3013**  
 Analysis of terrestrial conditions and dynamics

Period	Obligations	
12/01/82-02/28/86	FY85: \$90,000 TOTAL: \$302,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Goward, S. N.	GSFC/Middleton, E. M.	
	GSFC/Murphy, R. E.	32-Geological Sci

**NGR 21-002-096 University of Maryland - College Park 3020**  
 Research in atmospheric physics

Period	Obligations	
06/21/66-06/30/86	FY85: \$186,716 TOTAL: \$1,510,620	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Matthews, D. L.	GSFC/Hartle, R. E.	31-Atmos Sci
Austing, R.	GSFC/Hoegy, W. R.	

**NCC 5-31 University of Maryland - College Park 3014**  
 Solar oscillations: Resonances probing the solar interior

Period	Obligations	
07/01/84-06/30/86	FY85: TOTAL: \$20,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wentzel, D. G.	GSFC/Wolff, C. L.	11-Astronomy

**NGR 21-002-199 University of Maryland - College Park 3021**  
 Research in solar radio astronomy at short wavelengths

Period	Obligations	
04/11/69-10/31/85	FY85: \$60,000 TOTAL: \$791,656	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kundu, M. R.	HQ-EZ/Spicer, D. S.	13-Physics

**NCC 5-33 University of Maryland - College Park 3015**  
 Improved computer aided design software packages

Period	Obligations	
10/01/84-01/31/86	FY85: \$50,000 TOTAL: \$50,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Walston, W. H.	GSFC/Purves, L. R.	46-Mech Engr
	GSFC/Martin, F. T.	

**NGR 21-002-224 University of Maryland - College Park 3022**  
 Research on the measurement of the charge and isotopic composition on the primary cosmic rays

Period	Obligations	
07/31/69-10/31/85	FY85: \$160,000 TOTAL: \$741,300	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mason, G.	HQ-EZ/Ormes, J.	11-Astronomy
	HQ-EZ/Kaluzienski, L. J.	

**NGL 21-002-005 University of Maryland - College Park 3016**  
 Theoretical research on dynamics of astrophysical plasmas including studies of structure of plasma shock waves in solar corona and their possible radio emission

Period	Obligations	
02/01/62-11/30/85	FY85: \$150,000 TOTAL: \$1,627,493	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wu, C. S.	HQ-EE/Wiskerchen, M. J.	19-Phys Sci, NEC
	HQ-EE/Shawhan, S. D.	

**NGR 21-002-291 University of Maryland - College Park 3023**  
 Studies of charged particles in natural and laboratory environments

Period	Obligations	
01/28/71-01/15/85	FY85: TOTAL: \$502,898	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Coplan, M. A.	GSFC/Hoffman, R. A.	13-Physics
Moore, J. H.	GSFC/Heppner, J. P.	

**NGL 21-002-033 University of Maryland - College Park 3017**  
 Theoretical and experimental studies in space sciences, including consideration of rocket probe and satellites techniques

Period	Obligations	
06/02/64-03/31/86	FY85: \$247,600 TOTAL: \$4,059,769	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Trasco, J. D.	GSFC/Donn, B.	31-Atmos Sci
Kunde, M. R.		

**NGR 21-002-316 University of Maryland - College Park 3024**  
 Research program in charged particle detector technology

Period	Obligations	
07/01/71-04/30/86	FY85: \$747,000 TOTAL: \$6,613,005	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gloeckler, G.	GSFC/Ormes, J. F.	19-Phys Sci, NEC
Ipavich, F. M.	GSFC/Hoegy, W. R.	
Mason, G. M.		

**NGR 21-002-066 University of Maryland - College Park 3018**  
 A study of primary cosmic ray electrons, utilizing balloon-borne experiments

Period	Obligations	
11/19/65-03/31/86	FY85: \$30,000 TOTAL: \$975,001	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Earl, J. A.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Cline, T. L.	

**NGR 21-002-317 University of Maryland - College Park 3025**  
 Chemical studies of the origin of life

Period	Obligations	
08/18/71-12/31/85	FY85: \$170,226 TOTAL: \$1,619,126	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ponnamperuma, C. A.	HQ-EB/Devincenzi, D. L.	12-Chemistry
	HQ-EB/Rambler, M.	

**NGR 21-002-073 University of Maryland - College Park 3019**  
 Experimental and theoretical investigation of plasma radiation

Period	Obligations	
04/26/66-02/29/84	FY85: TOTAL: \$1,120,118	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Griem, H. R.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

**NGT 21-002-254 University of Maryland - College Park 3026**  
 Summer faculty fellowship program in research for 24 faculty members

Period	Obligations	
12/23/69-03/31/86	FY85: \$267,518 TOTAL: \$1,518,971	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Emad, F. O.	HQ-LB/Owens, F. C.	49-Engr, NEC

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**NGT 21-002-811 University of Maryland - College Park 3027**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
04/01/82-03/31/85	FY85:	TOTAL: \$29,428
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Amaty, R. R.	HQ-LB/Owens, F. C.	11-Astronomy

**NGT 21-002-812 University of Maryland - College Park 3028**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
04/01/82-03/31/85	FY85:	TOTAL: \$29,150
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gloeckler, G.	HQ-LB/Owens, F. C.	11-Astronomy

**NGT 21-002-814 University of Maryland - College Park 3029**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/82-05/31/85	FY85:	TOTAL: \$33,231
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Adler, I.	HQ-LB/Owens, F. C.	13-Physics

**NGT 21-002-816 University of Maryland - College Park 3030**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
05/18/82-05/17/85	FY85:	TOTAL: \$33,200
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Park, R. L.	HQ-LB/Owens, F. C.	13-Physics

**NGT 21-002-817 University of Maryland - College Park 3031**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
05/01/83-04/30/86	FY85: \$15,050	TOTAL: \$31,454
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Matthews, T. A.	HQ-LB/Owens, F. C.	11-Astronomy

**NGT 21-002-818 University of Maryland - College Park 3032**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
05/01/84-04/30/86	FY85: \$17,000	TOTAL: \$28,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yodh, G.	HQ-LB/Owens, F. C.	13-Physics

**NGT 21-002-819 University of Maryland - College Park 3033**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/84-08/31/86	FY85: \$14,930	TOTAL: \$26,560
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kerr, F.	HQ-LB/Owens, F. C.	11-Astronomy

**NGT 21-002-820 University of Maryland - College Park 3034**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/85-05/31/86	FY85: \$16,000	TOTAL: \$16,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gloeckler, G.	HQ-LE/Owens, F. C.	13-Physics

**NGT 21-002-821 University of Maryland - College Park 3035**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
04/01/85-03/31/86	FY85: \$16,000	TOTAL: \$16,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Boldt, E.	HQ-LE/Owens, F. C.	13-Physics

**NGT 21-002-823 University of Maryland - College Park 3036**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/85-05/31/86	FY85: \$15,000	TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Donaldson, B.	HQ-LE/Owens, F. C.	41-Aero Engr

**NSG 1570 University of Maryland - College Park 3037**  
General aviation aerodynamics and dynamics

<i>Period</i>	<i>Obligations</i>	
11/01/78-10/31/85	FY85: \$17,826	TOTAL: \$405,910
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Winkelmann, A. E.	LARC/Margason, R. J.	41-Aero Engr
Anderson, J. D.	LARC/Johnson, J. L., Jr.	
Barlow, J. B.		

**NSG 5123 University of Maryland - College Park 3038**  
Evaluation of software engineering disciplines

<i>Period</i>	<i>Obligations</i>	
08/01/76-10/31/85	FY85: \$135,000	TOTAL: \$665,209
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Basili, V. R.	GSFC/McGarry, F. E.	22-Computer Science

**NSG 5172 University of Maryland - College Park 3039**  
Raman spectroscopy of cosmic ices and planetary atmospheres

<i>Period</i>	<i>Obligations</i>	
04/01/77-02/28/86	FY85: \$66,748	TOTAL: \$215,184
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Khanna, R. K.	GSFC/Donn, B. D.	12-Chemistry

**NSG 5313 University of Maryland - College Park 3040**  
Resonance fluorescence in atmospheric gases research

<i>Period</i>	<i>Obligations</i>	
12/01/78-09/15/86	FY85: \$100,000	TOTAL: \$659,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McIlrath, T. J.	GSFC/Heaps, W. S.	13-Physics
	GSFC/McGee, T. J.	

**NSG 5423 University of Maryland - College Park 3041**  
Geologic modeling of the Patapsco watershed Maryland

<i>Period</i>	<i>Obligations</i>	
10/15/79-08/14/86	FY85: \$71,087	TOTAL: \$409,729
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chang, C. C.	GSFC/Masuoka, E.	32-Geological Sci
	GSFC/Bell, R.	



# **NASA'S UNIVERSITY PROGRAM** **MARYLAND (Continued)**

**NSG 7322 University of Maryland - College Park 3042**  
Research on comets

Period	Obligations	
03/01/77-08/31/85	FY85:	TOTAL: \$407,000
Prin. Invest.	NASA Tech. Officer	CASE Category
A'hearn, M. F.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Hillman, J. J.	

**NCA 5-99 University of Maryland - Eastern Shore 3043**  
Engineering and pre-engineering activities

Period	Obligations	
06/16/82-05/31/86	FY85:	TOTAL: \$190,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Rich, S.	GSFC/Mundy, J. R.	45-Elec Engr
	GSFC/Chapman, J. W.	

**NGT 21-002-822 Center For Environ & Estuarine Studies 3044**  
NASA graduate student researchers program

Period	Obligations	
05/01/85-04/30/86	FY85: \$16,800	TOTAL: \$16,800
Prin. Invest.	NASA Tech. Officer	CASE Category
Fisher, T. R.	HQ-LE/Owens, F. C.	51-Biological Sci

## **MASSACHUSETTS**

**NAG 5-533 Boston College 3045**  
Research relative to devising radiation belt models

Period	Obligations	
05/01/85-01/31/86	FY85: \$119,897	TOTAL: \$119,897
Prin. Invest.	NASA Tech. Officer	CASE Category
Carovillano, R. L.	GSFC/Stassinopoulos, E. G.	
Spjecdvik, W. N.		19-Phys Sci, NEC

**NCC 2-185 Boston College 3046**  
Solar wind in the distant heliosphere

Period	Obligations	
04/01/82-09/30/84	FY85:	TOTAL: \$84,715
Prin. Invest.	NASA Tech. Officer	CASE Category
Feynman, J.	ARC/Barnes, A.	11-Astronomy

**NAG 1-276 Boston University 3047**  
Extension of the Green's function method for unsteady super-sonic aerodynamic flow

Period	Obligations	
06/01/82-07/31/84	FY85:	TOTAL: \$87,614
Prin. Invest.	NASA Tech. Officer	CASE Category
Freedman, M. I.	LARC/Yates, E. C., Jr.	41-Aero Engr
	LARC/Des Marais, R. N.	

**NAG 1-564 Boston University 3048**  
Aerodynamics of unsteady viscous compressible flows past wings

Period	Obligations	
03/01/85-02/28/86	FY85: \$50,408	TOTAL: \$50,408
Prin. Invest.	NASA Tech. Officer	CASE Category
Bharadvaj, B. K.	LARC/Yates, E. C., Jr.	41-Aero Engr
Morino, L.		

**NAG 5-462 Boston University 3049**  
Ultraviolet study of the chromospheres in selected cool giant stars

Period	Obligations	
08/15/84-08/14/85	FY85:	TOTAL: \$4,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Smith, G.	GSFC/Kondo, Y.	11-Astronomy
Janes, K.		

**NAG 5-490 Boston University 3050**  
Optical diagnostics of selected chemical release experiments

Period	Obligations	
02/01/85-01/31/86	FY85: \$10,000	TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Mendillo, M.	GSFC/Acuno, M. H.	13-Physics

**NAG 5-564 Boston University 3051**  
A study of magnetospheric substorms onsets using spacecraft data

Period	Obligations	
07/01/85-06/30/86	FY85: \$34,900	TOTAL: \$34,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Hughes, W.	GSFC/Wales, R. O.	11-Astronomy

**NAG 5-623 Boston University 3052**  
Investigate artificially-created negative ion plasmas in the ionosphere

Period	Obligations	
03/01/84-10/31/85	FY85: \$50,000	TOTAL: \$89,970
Prin. Invest.	NASA Tech. Officer	CASE Category
Mendillo, M.	GSFC/Early, L. J.	13-Physics
	GSFC/Pless, R. H.	

**NAG 8-455 Boston University 3053**  
High energy observations of the highly luminous X-ray quasar NRAO 140 under the HEAO-3 guest investigator program

Period	Obligations	
08/01/83-07/31/85	FY85:	TOTAL: \$13,282
Prin. Invest.	NASA Tech. Officer	CASE Category
Marscher, A. P.	MSFC/Stone, J. F.	11-Astronomy

**NAG 8-467 Boston University 3054**  
Theoretical study of positron production and annihilation in the galactic center region under the HEAO 3 guest investigator program

Period	Obligations	
04/15/84-04/14/86	FY85:	TOTAL: \$14,985
Prin. Invest.	NASA Tech. Officer	CASE Category
Brecher, K.	MSFC/Johnson, W. G.	11-Astronomy

**NAG 8-518 Boston University 3055**  
Determination of the medium-energy X-ray spectrum of the highly luminous X-ray quasar NRAO 140 using EXOSAT

Period	Obligations	
04/01/85-03/31/86	FY85: \$15,031	TOTAL: \$15,031
Prin. Invest.	NASA Tech. Officer	CASE Category
Marscher, A. P.	MSFC/Johnson, W. G.	11-Astronomy

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

<b>NAG 8-537</b>	<b>Boston University</b>		<b>3056</b>
	Theoretical interpretation of the HEAO 3 observations of Cygnus x 3 under the HEAO 3 guest investigator program		
	<i>Period</i>	<i>Obligations</i>	
	07/01/85-06/30/86	FY85: \$14,970	TOTAL: \$14,970
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Marscher, A. P.	MSFC/Johnson, W. G.	11-Astronomy
<b>NAGW 141</b>	<b>Boston University</b>		<b>3057</b>
	The earliest occurrence and evolutionary development of microbial endoliths		
	<i>Period</i>	<i>Obligations</i>	
	02/01/81-10/31/84	FY85:	TOTAL: \$107,800
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Campbell, S. E.	HQ-EB/Devincenzi, D. L.	
	Golubic, S.	HQ-EB/Rambler, M.	51-Biological Sci
<b>NAGW 597</b>	<b>Boston University</b>		<b>3058</b>
	Development of strategies for seti		
	<i>Period</i>	<i>Obligations</i>	
	03/15/84-03/14/86	FY85: \$40,000	TOTAL: \$40,000
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Papagiannis, M. D.	HQ-EB/Devincenzi, D. L.	11-Astronomy
		HQ-EB/Rambler, M. R.	
<b>NAS 8-32844</b>	<b>Boston University</b>		<b>3059</b>
	Use of the Space Shuttle to create plasma holes for ionospheric and radio astronomical studies		
	<i>Period</i>	<i>Obligations</i>	
	10/01/77-10/31/86	FY85:	TOTAL: \$366,000
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Meudillo, M.	MSFC/Harwell, B.	31-Atmos Sci
		MSFC/Ise, R.	
<b>NAS 8-36324</b>	<b>Boston University</b>		<b>3060</b>
	A study entitled releases to induce plasma instabilities at the equator ripe		
	<i>Period</i>	<i>Obligations</i>	
	04/16/85-12/31/85	FY85: \$15,000	TOTAL: \$15,000
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Mendillo, M.	MSFC/Reasoner, D. L.	31-Atmos Sci
<b>NGR 22-004-025</b>	<b>Boston University</b>		<b>3061</b>
	Microbial contributions to the Precambrian Earth		
	<i>Period</i>	<i>Obligations</i>	
	12/15/70-12/31/85	FY85: \$85,963	TOTAL: \$791,988
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Margulis, L.	HQ-EB/Devincenzi, D. L.	
		HQ-EB/Rambler, M. B.	32-Geological Sci
<b>NGT 22-004-800</b>	<b>Boston University</b>		<b>3062</b>
	Unsteady transonic aerodynamics research		
	<i>Period</i>	<i>Obligations</i>	
	09/01/80-08/31/84	FY85:	TOTAL: \$36,583
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Morino, L.	LARC/Yates, E. C.	41-Aero Engr
<b>NGT 22-004-806</b>	<b>Boston University</b>		<b>3063</b>
	NASA graduate student researchers program		
	<i>Period</i>	<i>Obligations</i>	
	09/01/84-04/30/86	FY85: \$23,500	TOTAL: \$23,500
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Phillips, T. G.	HQ-LB/Owens, F. C.	49-Engr, NEC
<b>NGT 22-008-804</b>	<b>Boston University</b>		<b>3064</b>
	NASA graduate student researchers program		
	<i>Period</i>	<i>Obligations</i>	
	06/01/82-05/31/85	FY85:	TOTAL: \$43,000
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Tseng, K.	HQ-LB/Owens, F. C.	41-Aero Engr
<b>NGT 22-008-805</b>	<b>Boston University</b>		<b>3065</b>
	NASA graduate student researchers program		
	<i>Period</i>	<i>Obligations</i>	
	06/01/82-08/31/85	FY85:	TOTAL: \$43,000
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Tseng, K.	HQ-LB/Owens, F. C.	41-Aero Engr
<b>NSG 1644</b>	<b>Boston University</b>		<b>3066</b>
	Noisiness and annoyance of noise-tone complexes		
	<i>Period</i>	<i>Obligations</i>	
	09/01/79-06/15/85	FY85:	TOTAL: \$149,871
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Hellman, R. P.	LARC/Powell, C. A.	69-Psych, NEC
		LARC/Willshire, K. F.	
<b>NAS 9-15147</b>	<b>Brandeis University</b>		<b>3067</b>
	Vestibular selection criteria development		
	<i>Period</i>	<i>Obligations</i>	
	09/01/76-07/01/86	FY85: \$650,000	TOTAL: \$1,557,198
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Lackner, J. B.	JSC/Harris, J.	59-Life Sci, NEC
<b>NAG 5-456</b>	<b>Emmanuel College</b>		<b>3068</b>
	A study of the generation mechanisms of high latitude and equatorial region irregularities		
	<i>Period</i>	<i>Obligations</i>	
	08/01/84-07/31/86	FY85:	TOTAL: \$26,667
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Basu, S.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
		GSFC/Hoffman, R. A.	
<b>NAG 1-55</b>	<b>Harvard University</b>		<b>3069</b>
	Experimental studies of trace gas distributions and fluxes in the atmosphere atmospheric gases		
	<i>Period</i>	<i>Obligations</i>	
	04/03/80-07/31/86	FY85: \$266,114	TOTAL: \$1,195,210
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	McElroy, M. B.	LARC/Hoell, J. M.	31-Atmos Sci
	Wofsy, S. C.	LARC/Rhinehart, R. P.	
<b>NAG 2-294</b>	<b>Harvard University</b>		<b>3070</b>
	Mechanisms of circulatory regulation with volume loading and depletion in conscious animals		
	<i>Period</i>	<i>Obligations</i>	
	01/01/84-12/31/84	FY85:	TOTAL: \$58,199
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Vatner, S.	ARC/Sandler, H.	59-Life Sci, NEC

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

**NAG 5-144** **Harvard University** **3071**  
High resolution ultraviolet cross section measurements of ozone  
*Period* *Obligations*  
03/01/81-08/15/84 FY85: TOTAL: \$214,124  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Parkinson, W. H. GSFC/Reed, E. I. 13-Physics  
Freeman, D. E. HQ-EB/Watson, R. T.  
Yoshino, K.

**NAG 5-314** **Harvard University** **3072**  
Study of miocene and pilocene foredeep development and lithospheric flexure of the adriatic foreland (Italy and Yugoslavia)  
*Period* *Obligations*  
05/01/83-06/30/84 FY85: TOTAL: \$30,310  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
England, P. C. GSFC/Welker, J. E. 32-Geological Sci

**NAG 5-448** **Harvard University** **3073**  
Non-thermal oxygen emission profile  
*Period* *Obligations*  
07/15/84-10/14/85 FY85: TOTAL: \$22,780  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dalgarno, A. GSFC/Bullock, G. D. 19-Phys Sci, NEC  
GSFC/Hoffman, R. A.

**NAG 5-538** **Harvard University** **3074**  
Very long baseline interferometry determination and interpretation of the relative motions within a network of sites in North America and Europe  
*Period* *Obligations*  
05/01/85-04/30/86 FY85: \$136,067 TOTAL: \$136,067  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shapiro, I. I. GSFC/Mead, G. D. 32-Geological Sci

**NAG 8-445** **Harvard University** **3075**  
Collaborative studies of solar-type and other coronae from the Einstein Observatory (HEAO-2)  
*Period* *Obligations*  
10/01/82-09/30/83 FY85: TOTAL: \$10,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rosner, R. MSFC/Stone, J. F. 11-Astronomy

**NAG 8-459** **Harvard University** **3076**  
Further collaborative studies of solar type and other coronae from the Einstein Observatory (HEAO-2)  
*Period* *Obligations*  
10/01/83-03/31/85 FY85: TOTAL: \$12,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rosner, R. MSFC/Johnson, W. G. 11-Astronomy

**NAG 8-533** **Harvard University** **3077**  
Continued collaborative studies of solar type and other coronae from the Einstein Observatory HEAO 2  
*Period* *Obligations*  
06/01/85-05/31/86 FY85: \$18,026 TOTAL: \$18,026  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rosner, R. MSFC/Johnson, W. G. 11-Astronomy

**NAG 9-17** **Harvard University** **3078**  
Angiotensin antagonists and volume homeostasis: Studies in man, intact animals and isolated tissues  
*Period* *Obligations*  
03/06/81-10/01/85 FY85: \$40,000 TOTAL: \$171,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hollenberg, N. K. JSC/Leach, C. S. 56-Medical Sciences

**NAG 9-89** **Harvard University** **3079**  
Crustal genesis on terrestrial planets  
*Period* *Obligations*  
08/01/84-04/01/86 FY85: \$6,000 TOTAL: \$11,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Cameron, A. G. JSC/Phinney, W. C. 32-Geological Sci

**NAG 9-90** **Harvard University** **3080**  
Crustal genesis study  
*Period* *Obligations*  
07/01/84-05/01/86 FY85: \$20,000 TOTAL: \$47,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Jacobsen, S. B. JSC/Phinney, W. C. 32-Geological Sci

**NAGW 79** **Harvard University** **3081**  
Theoretical program in plasma and magnetohydrodynamics processes relevant to the solar corona and its analogues  
*Period* *Obligations*  
06/01/80-05/31/86 FY85: \$108,074 TOTAL: \$896,268  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rosner, R. HQ-EE/Butler, D. M. 11-Astronomy  
HQ-EE/Curtis, S. A.

**NAGW 359** **Harvard University** **3082**  
Chermestry of stratospheres and tropospheres gases  
*Period* *Obligations*  
07/01/82-12/14/85 FY85: TOTAL: \$627,806  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McElroy, M. B. HQ-EE/Butler, D. M. 11-Astronomy  
Prather, M. HQ-EE/Demore, W. B.

**NAGW 417** **Harvard University** **3083**  
Theoretical studies of the compontion and evolution of planetary atmospheres  
*Period* *Obligations*  
01/01/83-12/31/85 FY85: \$77,000 TOTAL: \$212,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McElroy, G. B. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NAGW 556** **Harvard University** **3084**  
Effects of climatic change on evolution of Martian volatiles  
*Period* *Obligations*  
03/01/84-02/28/86 FY85: \$55,000 TOTAL: \$110,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McElroy, M. B. HQ-EL/Brinton, H. C. 32-Geological Sci  
HQ-EL/Brunk, W. E.

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

**NAGW 599 Harvard University 3085**  
Paleosols as indicators of atmospheric evolution  
*Period Obligations*  
04/01/84-10/01/86 FY85: \$30,000 TOTAL: \$80,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Holland, A. D. HQ-EB/Devincenzi, D. L.  
HQ-EB/Rambler, M. B. 32-Geological Sci

**NAGW 624 Harvard University 3086**  
Development of an energetic X-ray imaging experiment (EXITE) and associated balloon gondola system  
*Period Obligations*  
04/01/84-03/31/86 FY85: \$200,114 TOTAL: \$350,460  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Grindlay, J. HQ-EZ/Kaluziński, L. J. 11-Astronomy  
HQ-EZ/Cline, T. L.

**NAGW 731 Harvard University 3087**  
Three dimensional modeling of the stratosphere: Analysis of perturbations due to altered ozone and carbon dioxide  
*Period Obligations*  
04/01/85-03/31/86 FY85: \$85,000 TOTAL: \$85,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
McElroy, M. B. HQ-EE/Butler, D. M. 31-Atmos Sci  
Wofsy, S. C. HQ-EE/Demore, W. B.

**NAS 2-10547 Harvard University 3088**  
Fluid and electrolyte homostasis during spaceflight: Elucidation of mechanisms in a primate  
*Period Obligations*  
01/17/80-03/31/88 FY85: \$301,585 TOTAL: \$1,089,717  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Moore-edde, M. C. ARC/Leon, H. 51-Biological Sci  
ARC/Connolly, J.

**NAS 5-26557 Harvard University 3089**  
Preliminary definition phase effort for the solar irradiance spectrometer for Spacelab  
*Period Obligations*  
07/01/81-12/30/84 FY85: TOTAL: \$110,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Parkinson, W. H. GSFC/Lundholm, J. 31-Atmos Sci

**NAS 5-27229 Harvard University 3090**  
Studies of continual deformation plate motion, and polar motion, using geodetic data from space techniques  
*Period Obligations*  
08/12/82-08/12/86 FY85: \$134,079 TOTAL: \$318,991  
*Prin. Invest. NASA Tech. Officer CASE Category*  
O'Connell, R. J. GSFC/Mead, G. D. 32-Geological Sci  
England, P. C.

**NAS 5-27571 Harvard University 3091**  
VLBI determination and interpretation of relative motions within a network of sites in North America and Europe  
*Period Obligations*  
03/01/83-04/30/85 FY85: \$1,884 TOTAL: \$189,030  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Shapiro, I. I. GSFC/Mead, G. D. 32-Geological Sci  
Counselman, C. C.

**NAS 5-27739 Harvard University 3092**  
Analysis of lunar laser ranging data for Earth dynamics applications  
*Period Obligations*  
09/30/83-09/30/85 FY85: \$59,318 TOTAL: \$154,746  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Shapiro, I. I. GSFC/Mead, G. D. 32-Geological Sci  
King, R. W.  
Counselman, C. C.

**NAS 8-35416 Harvard University 3093**  
Bulk formation of metallic glasses and amorphous silicon from the melt  
*Period Obligations*  
05/16/83-09/22/86 FY85: \$116,000 TOTAL: \$180,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Spaepen, F. MSFC/Gardner, L. B. 13-Physics

**NASW 3242 Harvard University 3094**  
In-situ studies of free radicals in the Earth's stratosphere  
*Period Obligations*  
07/05/78-04/30/84 FY85: \$10,824 TOTAL: \$6,894,227  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Anderson, J. G. HQ-EE/Watson, R. T. 31-Atmos Sci  
HQ-EE/Hilsenrath, E.

**NASW 3940 Harvard University 3095**  
Solar and terrestrial atmospheres spectrometer for Spacelab  
*Period Obligations*  
10/01/84-09/30/86 FY85: \$247,800 TOTAL: \$247,800  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Parkinson, W. H. HQ-EE/Eisenwein, G. F. 99-Multi-Discip  
HQ-EE/Watson, R. T.

**NASW 3960 Harvard University 3096**  
Field measurement program to examine in situ, the photochemistry of h, oh, ho, h2o, c1, c10, NO, o,  
*Period Obligations*  
04/01/84-03/31/87 FY85: \$4,760,781 TOTAL: \$4,760,781  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Anderson, J. G. HQ-EE/Smith, M. A. 31-Atmos Sci  
HQ-EE/Demore, W. B.

**NGL 22-007-006 Harvard University 3097**  
Theoretical and experimental studies on ultraviolet solar physics  
*Period Obligations*  
07/10/63-09/30/85 FY85: \$145,000 TOTAL: \$6,150,398  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Parkinson, W. H. HQ-EZ/Spicer, D. S. 13-Physics

**NGL 22-007-069 Harvard University 3098**  
Infrared absorption spectrophotometry of organic extractives from Precambrian sediments  
*Period Obligations*  
05/29/66-06/01/85 FY85: TOTAL: \$578,178  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Barghoorn, R. S. HQ-EB/Devincenzi, D. L. 32-Geological Sci  
HQ-EB/Rambler, M. B.

**NASA'S UNIVERSITY PROGRAM  
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**NGL 22-007-228 Harvard University 3099**  
Theoretical investigation of multiphase in Jupiter interior and possible relationship to behavior of outer atmospheric layers

Period	Obligations	
12/15/71-10/31/85	FY85: \$304,260	TOTAL: \$3,720,491
Prin. Invest.	NASA Tech. Officer	CASE Category
Goody, R. M.	HQ-EL/Brinton, H. C.	31-Atmos Sci
Lindzen, R. S.	HQ-EL/Brunk, W. E.	

**NGR 22-007-269 Harvard University 3100**  
Theoretical research in planetary physics

Period	Obligations	
09/01/73-02/28/86	FY85: \$60,000	TOTAL: \$688,304
Prin. Invest.	NASA Tech. Officer	CASE Category
Cameron, A. G.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NGR 22-007-272 Harvard University 3101**  
Theoretical studies in space astronomy

Period	Obligations	
09/01/73-09/30/85	FY85: \$70,000	TOTAL: \$587,852
Prin. Invest.	NASA Tech. Officer	CASE Category
Cameron, A. G.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
	HQ-EZ/Ormes, J. F.	

**NSG 2265 Harvard University 3102**  
Geometrical methods for nonlinear dynamics

Period	Obligations	
09/01/77-10/31/84	FY85:	TOTAL: \$218,181
Prin. Invest.	NASA Tech. Officer	CASE Category
Byrnes, C. I.	ARC/Meyer, G.	49-Engr, NEC
	ARC/Doolin, B. F.	

**NSG 5128 Harvard University 3103**  
Lyman alpha coronagraph research sounding rocket program

Period	Obligations	
07/15/76-02/28/85	FY85:	TOTAL: \$1,780,876
Prin. Invest.	NASA Tech. Officer	CASE Category
Parkinson, W. H.	GSFC/Early, L. J.	13-Physics
Kohl, J. L.	HQ-EZ/Bohlin, J. D.	

**NSG 5176 Harvard University 3104**  
Research of high resolution vacuum ultraviolet absorption cross-sections of stratospheric molecules

Period	Obligations	
06/01/77-06/30/85	FY85:	TOTAL: \$462,702
Prin. Invest.	NASA Tech. Officer	CASE Category
Parkinson, W. H.	GSFC/Eberstein, I.	13-Physics
Freeman, D. E.	HQ-EE/Watson, R. T.	
Yoshino, K.		

**NSG 7176 Harvard University 3105**  
Participation in NASA core funding

Period	Obligations	
11/01/75-03/31/86	FY85: \$140,000	TOTAL: \$2,124,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Shapiro, I. I.	HQ-EP/Rosendhal, J. D.	11-Astronomy
McElroy, M. B.	HQ-EP/Konkel, R. M.	

**NSG 7304 Harvard University 3106**  
Absolute transition probabilities in ultraviolet spectra of interstellar molecules

Period	Obligations	
12/15/76-02/14/86	FY85: \$66,371	TOTAL: \$487,599
Prin. Invest.	NASA Tech. Officer	CASE Category
Parkinson, W. H.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

**NSG 9054 Harvard University 3107**  
Fluid and electrolyte homeostasis during spaceflight: Ground-based preparative studies in a primate

Period	Obligations	
02/01/77-03/31/84	FY85:	TOTAL: \$334,160
Prin. Invest.	NASA Tech. Officer	CASE Category
Moore-ede, M. C.	JSC/Leach, C. S.	56-Medical Sciences

**NAG 1-48 Massachusetts Institute of Technology 3108**  
Development of higher power single mode PbSnTe/ PbTeSe diode lasers (PbSnTe) laser diodes

Period	Obligations	
03/01/80-12/31/84	FY85:	TOTAL: \$230,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Fonstad, C. G.	LARC/Magee, C. J.	45-Elec Engr
	LARC/Miller, W. E.	

**NAG 1-126 Massachusetts Institute of Technology 3109**  
Reliability issues in active control of large flexible space structures

Period	Obligations	
11/15/80-11/14/85	FY85: \$95,540	TOTAL: \$490,030
Prin. Invest.	NASA Tech. Officer	CASE Category
Vandervelde, W. E.	LARC/Montgomery, R. C.	41-Aero Engr
	LARC/Williams, J. P.	

**NAG 1-164 Massachusetts Institute of Technology 3110**  
Study of noise, excess noise, and tunable local oscillator performance of lead-salt diode lasers

Period	Obligations	
03/15/81-12/31/84	FY85:	TOTAL: \$415,207
Prin. Invest.	NASA Tech. Officer	CASE Category
Freed, C.	LARC/Katzberg, S. J.	13-Physics
Fonstad, C. G.		

**NAG 1-206 Massachusetts Institute of Technology 3111**  
Cooperative program for stimulate student involvement through undergraduate research opportunity program

Period	Obligations	
09/01/81-11/30/83	FY85:	TOTAL: \$97,129
Prin. Invest.	NASA Tech. Officer	CASE Category
Covert, E. E.	LARC/Kilgore, R. A.	41-Aero Engr
Murman, E. M.		
Baron, J. R.		

**NAG 1-229 Massachusetts Institute of Technology 3112**  
Computational analysis of scramjet dural mode operations

Period	Obligations	
11/01/81-04/30/86	FY85: \$47,627	TOTAL: \$209,842
Prin. Invest.	NASA Tech. Officer	CASE Category
Murman, E. M.	LARC/Beach, H. L., Jr.	41-Aero Engr
Bussing, T. R.	LARC/Anderson, G. Y.	

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## **NAG 1-358      Massachusetts Institute of Technology   3113** Computational methods for vortex dominated compressible flows

<i>Period</i>	<i>Obligations</i>	
04/01/83-06/30/86	FY85: \$54,917	TOTAL: \$164,057
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Murman, E. M.	LARC/Melson, N. D.	41-Aero Engr
	LARC/South, J. C., Jr.	

## **NAG 1-472      Massachusetts Institute of Technology   3114** Potential impacts of advanced technologies on the air traffic control capacity of high density terminal areas

<i>Period</i>	<i>Obligations</i>	
05/01/84-08/31/85	FY85:	TOTAL: \$99,243
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Simpson, R. W.	LARC/Hinton, D. A.	41-Aero Engr
Odoni, A. R.	LARC/Bergeron, H. P.	

## **NAG 1-489      Massachusetts Institute of Technology   3115** Study of advanced methods for the dynamic control of high performance robotic devices and manipulators with potential for application in space

<i>Period</i>	<i>Obligations</i>	
06/01/84-11/30/85	FY85: \$86,553	TOTAL: \$127,253
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dubowsky, S.	LARC/Pennington, J. E.	46-Mech Engr
	LARC/Harrison, F. W.	

## **NAG 1-497      Massachusetts Institute of Technology   3116** A model for estimating aircraft encounters

<i>Period</i>	<i>Obligations</i>	
09/01/84-08/31/85	FY85:	TOTAL: \$69,602
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Simpson, R. W.	LARC/Howell, W. E.	41-Aero Engr
	LARC/Shaugnessy, J. D.	

## **NAG 1-507      Massachusetts Institute of Technology   3117** Computational fluid dynamics

<i>Period</i>	<i>Obligations</i>	
09/01/84-08/31/86	FY85: \$56,435	TOTAL: \$106,679
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Murman, E. M.	LARC/Dwoyer, D. L.	41-Aero Engr
Baron, J. R.	LARC/Drummond, J. P.	

## **NAG 1-568      Massachusetts Institute of Technology   3118** Effect of surface chemistry on aerodynamic penalty associated with flight through heavy rain

<i>Period</i>	<i>Obligations</i>	
02/11/85-02/10/86	FY85: \$54,840	TOTAL: \$54,840
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hansman, R. J., Jr.	LARC/Dunham, R. E., Jr.	41-Aero Engr

## **NAG 1-574      Massachusetts Institute of Technology   3119** Sub-domain techniques for solution of the Euler and Navier-Stokes equations on parallel processors

<i>Period</i>	<i>Obligations</i>	
06/01/85-05/31/86	FY85: \$40,380	TOTAL: \$40,380
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Patera, A. T.	LARC/Zang, T. A.	29-Math/Computer, NEC
Murman, E. M.	LARC/Dwoyer, D. L.	

## **NAG 2-12      Massachusetts Institute of Technology   3120** Research on visual vestibular interaction and its application to flight simulation

<i>Period</i>	<i>Obligations</i>	
12/01/79-10/31/85	FY85: \$84,948	TOTAL: \$499,629
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Young, L. R.	ARC/Lee, A. T.	49-Engr, NEC
Bussolari, S. R.	ARC/Bray, R. S.	
Kenyon, R.		

## **NAG 2-88      Massachusetts Institute of Technology   3121** Habituation of novel visual vestibular environments with particular reference to space flight

<i>Period</i>	<i>Obligations</i>	
01/16/81-01/31/86	FY85:	TOTAL: \$372,435
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Young, L. R.	ARC/Daunton, N. G.	51-Biological Sci
Kenyon, R. V.		
Oman, C. M.		

## **NAG 2-105      Massachusetts Institute of Technology   3122** Computational methods for nonlinear vortex wake flow fields

<i>Period</i>	<i>Obligations</i>	
02/15/81-07/31/84	FY85:	TOTAL: \$148,743
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Murman, E. M.	ARC/Hicks, R. M.	41-Aero Engr

## **NAG 2-126      Massachusetts Institute of Technology   3123** Neural mechanisms subserving head movements

<i>Period</i>	<i>Obligations</i>	
07/01/81-05/31/84	FY85:	TOTAL: \$93,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bizzi, E.	ARC/Daunton, N. G.	51-Biological Sci
	ARC/Suri, K.	

## **NAG 2-132      Massachusetts Institute of Technology   3124** Effects of consuming various foods and nutrients on subjective aspects of human performance and behavior

<i>Period</i>	<i>Obligations</i>	
09/01/81-08/31/84	FY85:	TOTAL: \$176,333
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wurtman, R. J.	ARC/Patton, R. M.	61-Biol Aspects

## **NAG 2-182      Massachusetts Institute of Technology   3125** Correlation of experimental and theoretical results applied to a model helicopter rotor generating blade slap

<i>Period</i>	<i>Obligations</i>	
06/15/82-01/31/86	FY85: \$45,000	TOTAL: \$237,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hubbard, J. E., Jr.	ARC/Smith, C. A.	41-Aero Engr
	ARC/Warmbrodt, W. G.	

## **NAG 2-190      Massachusetts Institute of Technology   3126** Advanced automated control of aircraft in terminal airspace

<i>Period</i>	<i>Obligations</i>	
08/01/82-09/30/84	FY85:	TOTAL: \$154,145
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Simpson, R. W.	ARC/Tobias, L.	41-Aero Engr
	ARC/Erzberger, H.	

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**NAG 2-210 Massachusetts Institute of Technology 3127**  
Nutritional control of brain neurotransmitters

Period	Obligations	
11/01/82-10/31/85	FY85: \$121,250	TOTAL: \$305,445
Prin. Invest.	NASA Tech. Officer	CASE Category
Wurtman, R. J.	ARC/Winget, C. M.	56-Medical Sciences
Wieberman, H. R.		

**NAG 2-224 Massachusetts Institute of Technology 3128**  
Supercritical water oxidation of products of human metabolism

Period	Obligations	
01/01/83-06/30/86	FY85:	TOTAL: \$232,334
Prin. Invest.	NASA Tech. Officer	CASE Category
Hall, G. A.	ARC/Wydwon, J.	43-Chem Engr
	ARC/Quattrove, P. R.	

**NAG 2-227 Massachusetts Institute of Technology 3129**  
The relationship between aircraft control automation, mental workload, and pilot error in a laboratory simulator

Period	Obligations	
01/01/83-03/31/85	FY85: \$20,000	TOTAL: \$72,977
Prin. Invest.	NASA Tech. Officer	CASE Category
Sheridan, T.	ARC/Hart, S. G.	69-Psych, NEC

**NAG 2-247 Massachusetts Institute of Technology 3130**  
Specification of a data flow computer for aerodynamic simulation

Period	Obligations	
07/01/83-10/31/85	FY85: \$50,000	TOTAL: \$200,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Dennis, J. B.	ARC/Stevens, K. G.	22-Computer Science
	ARC/Schulbach, C. H.	

**NAG 2-251 Massachusetts Institute of Technology 3131**  
Vortex-wake dynamics: Application to rotor airload calculations

Period	Obligations	
09/01/83-08/31/86	FY85:	TOTAL: \$154,685
Prin. Invest.	NASA Tech. Officer	CASE Category
Widnall, S. E.	ARC/Johnson, W. R.	41-Aero Engr
	ARC/Felker, F. F.	

**NAG 2-257 Massachusetts Institute of Technology 3132**  
Determining the causes of the large images on the Kuiper Airborne Observatory

Period	Obligations	
11/01/83-10/31/86	FY85: \$369,340	TOTAL: \$735,465
Prin. Invest.	NASA Tech. Officer	CASE Category
Elliot, J. L.	ARC/Gillespie, C. M., Jr.	
	ARC/Cameron, R. M.	19-Phys Sci, NEC

**NAG 2-275 Massachusetts Institute of Technology 3133**  
Analytical investigation of rotor wake formation and geometry

Period	Obligations	
02/01/84-01/31/86	FY85: \$79,940	TOTAL: \$134,933
Prin. Invest.	NASA Tech. Officer	CASE Category
Miller, R. H.	ARC/Johnson, W. R.	41-Aero Engr
Murman, E. M.	ARC/Stremel, P. M.	

**NAG 2-297 Massachusetts Institute of Technology 3134**  
Nonlinear and adaptive control systems

Period	Obligations	
06/01/84-05/31/85	FY85: \$25,000	TOTAL: \$150,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Athans, M.	ARC/Meyer, G.	49-Engr, NEC

**NAG 2-327 Massachusetts Institute of Technology 3135**  
Noninvasive assessment of cardiorespiratory function and regulation by mathematical analysis of period

Period	Obligations	
01/01/85-12/31/85	FY85: \$95,000	TOTAL: \$95,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Cohen, R. J.	ARC/Sandler, H.	59-Life Sci, NEC

**NAG 3-9 Massachusetts Institute of Technology 3136**  
Research applied to transonic compressors in numerical fluid mechanics of inviscid flow and viscous flow

Period	Obligations	
12/01/79-11/30/84	FY85:	TOTAL: \$360,809
Prin. Invest.	NASA Tech. Officer	CASE Category
Thompkins, W. T., Jr.	LERC/Chima, R. V.	41-Aero Engr
Murman, E. M.	LERC/Sockol, P. M.	

**NAG 3-33 Massachusetts Institute of Technology 3137**  
Advanced stress analysis of turbine engine structures

Period	Obligations	
04/01/80-12/31/84	FY85:	TOTAL: \$312,385
Prin. Invest.	NASA Tech. Officer	CASE Category
Pian, T. H.	LERC/Berke, L.	46-Mech Engr
	LERC/Johns, R. H.	

**NAG 3-82 Massachusetts Institute of Technology 3138**  
Development and use of generalized internal combustion engine cycle simulations

Period	Obligations	
06/23/80-12/31/85	FY85: \$69,976	TOTAL: \$393,308
Prin. Invest.	NASA Tech. Officer	CASE Category
Heywood, J. B.	LERC/Bond, T. H.	41-Aero Engr
	LERC/Schock, H. J.	

**NAG 3-173 Massachusetts Institute of Technology 3139**  
Effect of gravity on minimum ignition energies of premixed gases

Period	Obligations	
04/06/81-06/30/84	FY85:	TOTAL: \$138,605
Prin. Invest.	NASA Tech. Officer	CASE Category
Wachman, H. Y.	LERC/Vento, D. M.	49-Engr, NEC
Williams, G. C.		

**NAG 3-200 Massachusetts Institute of Technology 3140**  
Structural response of a rotating bladed disc to rotor whirl

Period	Obligations	
10/01/81-12/31/83	FY85: \$810	TOTAL: \$143,963
Prin. Invest.	NASA Tech. Officer	CASE Category
Crawley, E. F.	LERC/Kielb, R. E.	41-Aero Engr

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**NAG 3-280 Massachusetts Institute of Technology 3141**  
Thermomechanical low cycle fatigue research

<i>Period</i>	<i>Obligations</i>	
07/01/82-09/30/85	FY85:	TOTAL: \$151,190
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pelloux, R. M.	LERC/Barrow, B. J.	47-Materials Engr
Marchand, N.	LERC/Bill, R. C.	

**NAG 3-283 Massachusetts Institute of Technology 3142**  
Electromagnetic accelerator technology

<i>Period</i>	<i>Obligations</i>	
05/15/82-09/02/84	FY85:	TOTAL: \$144,889
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Holm, H.	LERC/Terdan, F. F.	13-Physics
Graneau, P.	LERC/Kerslake, W.	
Mongeau, P.		

**NAG 3-312 Massachusetts Institute of Technology 3143**  
Processing of laser former SiC powers

<i>Period</i>	<i>Obligations</i>	
07/30/82-10/29/85	FY85: \$65,670	TOTAL: \$163,523
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Haggerty, J. S.	LERC/Dutta, S.	47-Materials Engr

**NAG 3-328 Massachusetts Institute of Technology 3144**  
Wave propagation in fiber composites relating to acoustic ultrasonic NDE techniques

<i>Period</i>	<i>Obligations</i>	
10/06/82-01/03/86	FY85: \$49,991	TOTAL: \$150,342
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Williams, J. H., Jr.	LERC/Vary, A.	47-Materials Engr
Lee, S. S.		

**NAG 3-335 Massachusetts Institute of Technology 3145**  
Impingement cooling of gas turbine blades in a rotating system

<i>Period</i>	<i>Obligations</i>	
09/20/82-11/09/84	FY85: \$1,178	TOTAL: \$141,206
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Epstein, A. H.	LERC/Rohde, J. E.	46-Mech Engr

**NAG 3-365 Massachusetts Institute of Technology 3146**  
Mathematical modelling of the production and the physical characterization of rapidly solidified nickel based superalloys

<i>Period</i>	<i>Obligations</i>	
12/01/82-11/29/85	FY85: \$59,900	TOTAL: \$186,152
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Szekely, J.	LERC/Glasgow, T. K.	47-Materials Engr
Vander Sande, J. B.		

**NAG 3-377 Massachusetts Institute of Technology 3147**  
Structural characterization of high temperature composites

<i>Period</i>	<i>Obligations</i>	
12/10/82-09/29/85	FY85: \$87,000	TOTAL: \$244,287
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mandell, J. F.	LERC/Chamis, C. C.	41-Aero Engr
	LERC/Johns, R. H.	

**NAG 3-378 Massachusetts Institute of Technology 3148**  
Horizontal axis windturbine aerodynamic noise

<i>Period</i>	<i>Obligations</i>	
12/15/82-08/31/84	FY85:	TOTAL: \$49,968
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Harris, W. L.	LERC/Spera, D. A.	41-Aero Engr
	LERC/Janetzke, D. C.	

**NAG 3-394 Massachusetts Institute of Technology 3149**  
A computer simulation of the heavy duty turbocompounded diesel cycle for studies of engine efficiency and performance

<i>Period</i>	<i>Obligations</i>	
02/15/83-05/27/85	FY85:	TOTAL: \$325,462
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Heywood, J. B.	LERC/Wood, J. C.	46-Mech Engr
Ekchian, J. A.		

**NAG 3-439 Massachusetts Institute of Technology 3150**  
High conductivity intercalated graphite fibers

<i>Period</i>	<i>Obligations</i>	
06/28/83-12/26/84	FY85:	TOTAL: \$49,605
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dresselhaus, M. S.	LERC/Banks, B. A.	13-Physics

**NAG 3-513 Massachusetts Institute of Technology 3151**  
Systems studies of space electric power

<i>Period</i>	<i>Obligations</i>	
12/28/83-02/28/86	FY85: \$50,000	TOTAL: \$150,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sanchez, M. M.	LERC/Presler, A. F.	46-Mech Engr
Louis, J. F.	LERC/Lacy, D. E.	

**NAG 3-558 Massachusetts Institute of Technology 3152**  
Space power systems using a modified Ericsson cycle with turbomachinery

<i>Period</i>	<i>Obligations</i>	
06/15/84-09/14/85	FY85:	TOTAL: \$38,270
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Louis, J. F.	LERC/Juhasz, A. J.	46-Mech Engr
Martinez-sanche, M.	LERC/Bloomfield, H. S.	

**NAG 3-594 Massachusetts Institute of Technology 3153**  
Mathematical and physical modelling of electromagnetically driven fluid flow and associated transport phenomena in containerless melts

<i>Period</i>	<i>Obligations</i>	
12/30/84-12/01/85	FY85: \$105,000	TOTAL: \$105,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Szekely, J.	LERC/Harf, F.	47-Materials Engr
El-kaddah, N.	LERC/Winsa, E. A.	

**NAG 3-597 Massachusetts Institute of Technology 3154**  
Undercooling and rapid solidification

<i>Period</i>	<i>Obligations</i>	
01/05/85-12/01/85	FY85: \$105,000	TOTAL: \$105,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Flemings, M. C.	LERC/Harf, F.	47-Materials Engr
Shiohara, Y.	LERC/Winsa, E. A.	



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**NAG 3-636 Massachusetts Institute of Technology 3155**  
Smart engines -adaptive component technology

Period	Obligations	
05/01/85-04/30/86	FY85: \$74,975	TOTAL: \$74,975
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Epstein, A. H.	LERC/Lahtinen, B.	41-Aero Engr
Greitzer, E. M.	LERC/Lorenzo, C. F.	
Valavani, L.		

**NAG 5-300 Massachusetts Institute of Technology 3162**  
Seismicity and active tectonics of the Andes and the origin of the Altylone

Period	Obligations	
03/15/83-06/30/86	FY85: \$37,610	TOTAL: \$137,583
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Molnar, P.	GSFC/Kouns, C. W.	32-Geological Sci
Burchfiel, B. C.	GSFC/Frey, H.	

**NAG 5-10 Massachusetts Institute of Technology 3156**  
Improved microwave retrieval techniques for atmospheric temperatures, winds and humidity

Period	Obligations	
02/01/80-12/31/85	FY85: \$190,600	TOTAL: \$720,600
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Staelin, D. H.	GSFC/Wilheit, T. T.	31-Atmos Sci
Rosenkranz, P. W.		

**NAG 5-307 Massachusetts Institute of Technology 3163**  
Determination of the general circulation of the ocean the marine geoid

Period	Obligations	
03/15/83-03/14/85	FY85:	TOTAL: \$295,595
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wunsch, C.	GSFC/Kirk, R. G.	33-Oceanography

**NAG 5-19 Massachusetts Institute of Technology 3157**  
Seismicity and active tectonics of the Andes and the origin of the Altiplano

Period	Obligations	
03/01/80-04/30/86	FY85:	TOTAL: \$117,704
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Molnar, P.	GSFC/Kouns, C. W.	32-Geological Sci
Burchfield, B. C.		

**NAG 5-322 Massachusetts Institute of Technology 3164**  
Numerical and data analysis of oceanographic studies

Period	Obligations	
05/15/83-03/31/86	FY85: \$50,000	TOTAL: \$225,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Harrison, D. E.	GSFC/Kirk, R. G.	33-Oceanography

**NAG 5-137 Massachusetts Institute of Technology 3158**  
Mechanisms of interannual ocean atmosphere interactions

Period	Obligations	
02/01/81-07/31/84	FY85:	TOTAL: \$69,200
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stone, P. H.	GSFC/Kalnay, E.	31-Atmos Sci
Frankignoul, C. F.		

**NAG 5-360 Massachusetts Institute of Technology 3165**  
Development of high accuracy and resolution, global and local geoid and gravity maps using satellite-to-satellite tracking data suitable for geophysics and oceanography

Period	Obligations	
08/01/83-12/31/84	FY85:	TOTAL: \$70,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gaposchkin, E. M.	GSFC/Welker, J. E.	32-Geological Sci

**NAG 5-149 Massachusetts Institute of Technology 3159**  
Study of seismic wave velocity structure in the downgoing slab

Period	Obligations	
04/15/81-06/30/84	FY85:	TOTAL: \$165,317
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Molnar, P.	GSFC/Kouns, C. W.	32-Geological Sci
	GSFC/McAdoo, D.	

**NAG 5-388 Massachusetts Institute of Technology 3166**  
Areal coverage of storm precipitation

Period	Obligations	
01/15/84-05/31/85	FY85:	TOTAL: \$60,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Eagleson, P.	GSFC/Sud, Y.	31-Atmos Sci

**NAG 5-248 Massachusetts Institute of Technology 3160**  
Research of the extent of a gaseous halo

Period	Obligations	
08/01/82-08/31/84	FY85:	TOTAL: \$20,010
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tremaine, S. D.	GSFC/Kondo, Y.	11-Astronomy
York, D. G.		
Cowie, A. S.		

**NAG 5-415 Massachusetts Institute of Technology 3167**  
Variable viscosity and flow in the Earth's mantle

Period	Obligations	
04/01/84-03/31/86	FY85: \$48,803	TOTAL: \$93,803
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Parsons, B.	GSFC/Welker, J. E.	32-Geological Sci
Daly, S. F.		

**NAG 5-270 Massachusetts Institute of Technology 3161**  
Remote sensing of Earth terrain

Period	Obligations	
09/01/82-01/15/86	FY85: \$90,529	TOTAL: \$271,059
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kong, J. A.	GSFC/Chang, A.	55-Agriculture Sci

**NAG 5-445 Massachusetts Institute of Technology 3168**  
On-board expert systems to augment Space Shuttle and space station autonomy

Period	Obligations	
08/01/84-12/31/85	FY85:	TOTAL: \$51,840
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Akin, D. L.	GSFC/Paddack, S. J.	22-Computer Science

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## **NAG 5-459      Massachusetts Institute of Technology    3169** Plate motions and deformations from geologic and geodetic data

<i>Period</i>	<i>Obligations</i>	
08/01/84-11/30/85	FY85:	TOTAL: \$66,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Jordan, T. H.	GSFC/Mead, G. D.	32-Geological Sci

## **NAG 5-495      Massachusetts Institute of Technology    3170** Coordinated observations of X-ray bright objects from X-ray and radio wavelengths

<i>Period</i>	<i>Obligations</i>	
03/15/85-03/14/86	FY85: \$4,985	TOTAL: \$4,985
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Urry, C. M.	GSFC/Kondo, Y.	11-Astronomy
Kondo, Y.		

## **NAG 5-510      Massachusetts Institute of Technology    3171** Use of LANDSAT images of vegetation cover to estimate effective hydraulic properties of soil

<i>Period</i>	<i>Obligations</i>	
02/01/85-01/31/86	FY85: \$95,000	TOTAL: \$95,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Eagleson, P. S.	GSFC/Schmugge, T.	32-Geological Sci
Bras, R. L.		

## **NAG 5-524      Massachusetts Institute of Technology    3172** Geophysical study of the structure and processes of the continental convergence zones-aljrene himologan belt

<i>Period</i>	<i>Obligations</i>	
05/01/85-04/30/86	FY85: \$45,000	TOTAL: \$45,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Molnar, P.	GSFC/Kouns, C. W.	32-Geological Sci
	GSFC/Frey, H.	

## **NAG 5-532      Massachusetts Institute of Technology    3173** Flexural deformation of the continental lithosphere of the adriatic sea

<i>Period</i>	<i>Obligations</i>	
05/01/85-04/30/86	FY85: \$35,000	TOTAL: \$35,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Royden, L. H.	GSFC/Welker, J. E.	32-Geological Sci

## **NAG 5-534      Massachusetts Institute of Technology    3174** Determination of the general circulation of the ocean and the marine geoid using satellite altimetry

<i>Period</i>	<i>Obligations</i>	
05/01/85-04/30/86	FY85: \$131,924	TOTAL: \$131,924
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wunsch, C.	GSFC/Kirk, R. G.	33-Oceanography

## **NAG 5-537      Massachusetts Institute of Technology    3175** Jupiter radio astronomy studies

<i>Period</i>	<i>Obligations</i>	
05/01/85-04/30/86	FY85: \$10,000	TOTAL: \$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Staelin, D. H.	GSFC/Kaiser, M. L.	13-Physics
	GSFC/Alexander, J. K.	

## **NAG 5-583      Massachusetts Institute of Technology    3176** Investigation of the Northern adriatic sea CZCS imagery and modelling

<i>Period</i>	<i>Obligations</i>	
07/15/85-07/16/86	FY85: \$8,621	TOTAL: \$8,621
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rizzoli, P. M.	GSFC/McClain, C. R.	33-Oceanography

## **NAG 5-584      Massachusetts Institute of Technology    3177** Analysis of the solar wind experiment

<i>Period</i>	<i>Obligations</i>	
10/01/85-12/31/85	FY85: \$19,877	TOTAL: \$19,877
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lazarus, A. J.	GSFC/Wales, R. O.	11-Astronomy

## **NAG 5-717      Massachusetts Institute of Technology    3178** Research relative to quantum well heterostructure devices for submillimeter local oscillators and mixers

<i>Period</i>	<i>Obligations</i>	
10/01/85-09/30/86	FY85: \$25,000	TOTAL: \$25,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sollner, T. G.	GSFC/Petuchowski, S. J.	13-Physics
Tannenwald, P. E.	GSFC/Buhl, D.	

## **NAG 8-493      Massachusetts Institute of Technology    3179** Scientific investigations with the data base HEAO-1 scanning modulator collimator

<i>Period</i>	<i>Obligations</i>	
10/01/84-09/30/85	FY85: \$100,000	TOTAL: \$100,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bradt, H. V.	MSFC/Johnson, W. G.	11-Astronomy

## **NAG 8-494      Massachusetts Institute of Technology    3180** Analysis of data obtained with the HEAO-2 satellite

<i>Period</i>	<i>Obligations</i>	
10/01/84-09/30/85	FY85: \$403,000	TOTAL: \$403,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Clark, G. W.	MSFC/Johnson, W. G.	11-Astronomy

## **NAG 8-495      Massachusetts Institute of Technology    3181** Analysis and evaluation of data from the HEAO A-4 experiment

<i>Period</i>	<i>Obligations</i>	
10/01/84-09/30/85	FY85: \$85,000	TOTAL: \$85,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lewin, W. H.	MSFC/Johnson, W. G.	11-Astronomy

## **NAG 8-517      Massachusetts Institute of Technology    3182** An X-ray survey of nearby galaxies

<i>Period</i>	<i>Obligations</i>	
03/01/85-12/31/85	FY85: \$9,900	TOTAL: \$9,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Markert, T. H.	MSFC/Johnson, W. G.	11-Astronomy

## **NAG 8-525      Massachusetts Institute of Technology    3183** High resolution X-ray spectroscopy (HRXS) investigation on the advanced X-ray astrophysics facility

<i>Period</i>	<i>Obligations</i>	
04/15/85-11/14/85	FY85: \$200,000	TOTAL: \$200,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Canizares, C. R.	MSFC/Daily, C. C.	11-Astronomy

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**NAG 8-531 Massachusetts Institute of Technology 3184**  
New observations of unusual or luminous h0323 + 023 an unusual BL lac object

Period	Obligations	
05/01/85-12/31/85	FY85: \$14,509	TOTAL: \$14,509
Prin. Invest.	NASA Tech. Officer	CASE Category
Bradt, H.	MSFC/Johnson, W. G.	11-Astronomy

**NAG 9-108 Massachusetts Institute of Technology 3185**  
Nonequilibrium chemistry of the early solar system

Period	Obligations	
05/01/85-04/31/86	FY85: \$35,000	TOTAL: \$35,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Prinn, R. G.	JSC/Browne, I. D.	47-Materials Engr

**NAGW 21 Massachusetts Institute of Technology 3186**  
Research program encompassed by space engineering

Period	Obligations	
11/01/79-09/30/85	FY85: \$450,000	TOTAL: \$2,302,935
Prin. Invest.	NASA Tech. Officer	CASE Category
Mar, J. W.	HQ-RT/Venneri, S. L.	42-Astro Engr
Miller, R. H.		

**NAGW 114 Massachusetts Institute of Technology 3187**  
Clays and the origin of life

Period	Obligations	
10/01/80-10/31/85	FY85: \$78,375	TOTAL: \$383,268
Prin. Invest.	NASA Tech. Officer	CASE Category
Prinn, R. G.	HQ-EB/Geib, D. S.	12-Chemistry
Hartman, H.	HQ-EB/Rambler, M. B.	

**NAGW 191 Massachusetts Institute of Technology 3188**  
Internal and surface evolution of the Galilean satellites

Period	Obligations	
04/01/81-05/31/85	FY85:	TOTAL: \$143,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Solomon, S.	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/Boyce, J. M.	

**NAGW 232 Massachusetts Institute of Technology 3189**  
A search for Earth-crossing asteroids

Period	Obligations	
09/01/81-08/31/85	FY85: \$46,140	TOTAL: \$196,140
Prin. Invest.	NASA Tech. Officer	CASE Category
Taff, L. G.	HQ-EL/Brunk, W. E.	11-Astronomy
	HQ-EL/Hillman, J. J.	

**NAGW 373 Massachusetts Institute of Technology 3190**  
Analysis of Jovian decametric data: Study of radio emission mechanism

Period	Obligations	
09/15/82-12/31/85	FY85:	TOTAL: \$60,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Staelin, D.	HQ-EL/Brinton, H.	11-Astronomy
	HQ-EL/Hillman, J. J.	

**NAGW 375 Massachusetts Institute of Technology 3191**  
Theoretical studies of suprathermal electrons in the extended solar corona

Period	Obligations	
11/01/82-10/31/85	FY85: \$55,009	TOTAL: \$155,972
Prin. Invest.	NASA Tech. Officer	CASE Category
Olbert, S.	HQ-EZ/Spicer, D. S.	13-Physics

**NAGW 433 Massachusetts Institute of Technology 3192**  
Venus surface composition as inferred from radar measurements

Period	Obligations	
02/15/83-03/31/86	FY85: \$65,035	TOTAL: \$177,905
Prin. Invest.	NASA Tech. Officer	CASE Category
Pattengill, G. H.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAGW 442 Massachusetts Institute of Technology 3193**  
Investigations in X-ray astronomy based on analysis of data from the SAS-3 archive

Period	Obligations	
04/01/83-03/31/86	FY85: \$150,000	TOTAL: \$550,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Clark, G. W.	HQ-EZ/Kaluziński, L. J.	11-Astronomy
	HQ-EZ/Cline, T. L.	

**NAGW 448 Massachusetts Institute of Technology 3194**  
A research program in advanced information systems

Period	Obligations	
06/01/84-09/30/85	FY85: \$176,596	TOTAL: \$586,916
Prin. Invest.	NASA Tech. Officer	CASE Category
Thompkins, W. T.	HQ-RT/Larsen, R. L.	
		22-Computer Science
Deyst, J. J.	HQ-RT/Holcomb, L. B.	

**NAGW 474 Massachusetts Institute of Technology 3195**  
Interpretation of NIMBUS-7 and SAGE-1 aerosol and trace gas data using three-dimensional models

Period	Obligations	
04/01/83-07/31/86	FY85: \$112,588	TOTAL: \$310,404
Prin. Invest.	NASA Tech. Officer	CASE Category
Prinn, R. G.	HQ-EE/Smith, M. A.	31-Atmos Sci
	HQ-EE/Butler, D. M.	

**NAGW 525 Massachusetts Institute of Technology 3196**  
Studies of global scale circulation processes of the Earth atmosphere

Period	Obligations	
11/01/83-10/31/85	FY85: \$190,000	TOTAL: \$440,600
Prin. Invest.	NASA Tech. Officer	CASE Category
Lindzen, R. S.	HQ-EE/Curran, R. J.	31-Atmos Sci
Dole, R.	HQ-EE/Theon, J.	

**NAGW 560 Massachusetts Institute of Technology 3197**  
The atmospheric lifetime experiment: Barbados station

Period	Obligations	
12/01/83-10/31/84	FY85:	TOTAL: \$68,022
Prin. Invest.	NASA Tech. Officer	CASE Category
Prinn, R. G.	HQ-EE/Watson, R. T.	31-Atmos Sci
	HQ-EE/Kakar, R. K.	

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**NAGW 578 Massachusetts Institute of Technology 3198**  
Influence of topography on the atmospheric predictability

Period	Obligations	
02/01/84-06/30/85	FY85: \$48,600	TOTAL: \$91,600
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rambaldi, S.	HQ-EE/Curran, R. J.	31-Atmos Sci
	HQ-EE/Theon, J. S.	

**NAGW 656 Massachusetts Institute of Technology 3199**  
Dynamics and structure of the planetary rings

Period	Obligations	
08/15/84-02/15/86	FY85: \$90,000	TOTAL: \$90,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Unavailable	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAGW 677 Massachusetts Institute of Technology 3200**  
Investigation of the dynamics of the Northern adriatic sea through CZCS satellite imagery

Period	Obligations	
03/01/84-07/31/85	FY85: \$15,810	TOTAL: \$15,810
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rizzoli, P.	HQ-EE/Esaias, W. E.	33-Oceanography
	HQ-EE/Wilson, W. S.	

**NAGW 703 Massachusetts Institute of Technology 3201**  
Diagnostic studies in relation to the stratosphere troposphere exchange product

Period	Obligations	
02/01/85-01/31/86	FY85: \$158,310	TOTAL: \$158,310
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Newell, R. E.	HQ-EE/Butler, D. M.	31-Atmos Sci
	HQ-EE/Demore, W. B.	

**NAGW 706 Massachusetts Institute of Technology 3202**  
Solar system dynamics

Period	Obligations	
02/01/85-01/31/86	FY85: \$33,383	TOTAL: \$33,383
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wisdom, J.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAGW 732 Massachusetts Institute of Technology 3203**  
Global atmospheric gases experiment (GAGE)

Period	Obligations	
11/01/84-10/31/85	FY85: \$54,259	TOTAL: \$54,259
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Prinn, R. G.	HQ-EE/Butler, D. M.	31-Atmos Sci
	HQ-EE/Demore, W. B.	

**NAGW 770 Massachusetts Institute of Technology 3204**  
Optical investigation of comet Halley

Period	Obligations	
07/01/85-06/30/86	FY85: \$59,110	TOTAL: \$59,110
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Jewitt, D. C.	HQ-EL/Brinton, H. C.	11-Astronomy
	HQ-EL/Bergstrahl, J. T.	

**NAGW 798 Massachusetts Institute of Technology 3205**  
Zonally averaged model of dynamics chemistry and radiation for the atmosphere

Period	Obligations	
06/01/85-05/31/86	FY85: \$120,617	TOTAL: \$120,617
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tung, K. K.	HQ-EE/Butler, D. M.	31-Atmos Sci
	HQ-EE/Smith, M. A.	

**NAS 2-9473 Massachusetts Institute of Technology 3206**  
Pioneer Venus data analysis of the radar altimeter experiment

Period	Obligations	
01/20/77-09/30/85	FY85: \$10,160	TOTAL: \$742,660
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pettingill, G. H.	ARC/Craig, R. A.	11-Astronomy
	ARC/Dyer, J. W.	

**NAS 2-11232 Massachusetts Institute of Technology 3207**  
Develop software for air traffic control simulator

Period	Obligations	
04/22/82-06/30/85	FY85:	TOTAL: \$182,112
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Simpson, R.	ARC/Nagel, D. C.	
Elias, A.		29-Math/Computer, NEC
Pararas, E.		

**NAS 3-24620 Massachusetts Institute of Technology 3208**  
Research study for a microgravity program

Period	Obligations	
07/08/85-04/24/87	FY85: \$81,000	TOTAL: \$81,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Szekely, J.	LERC/Harf, F.	47-Materials Engr

**NAS 3-24642 Massachusetts Institute of Technology 3209**  
Study electromagnetically driven flows in molten salts using laser velocimetry in a micro-gravity environment

Period	Obligations	
12/05/85-12/05/87	FY85: \$35,000	TOTAL: \$35,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Szekely, J.	LERC/Winsa, E. A.	47-Materials Engr
	LERC/Harf, F. H.	

**NAS 3-24649 Massachusetts Institute of Technology 3210**  
Conceptual design of a 100 kilowatt electrodynamic tether system

Period	Obligations	
09/30/85-01/13/87	FY85: \$100,000	TOTAL: \$100,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sanchez, M. M.	LERC/Kolecki, J. C.	13-Physics

**NAS 5-25790 Massachusetts Institute of Technology 3211**  
Interplanetary monitoring platform-J/plasma experiment-data reduction and analysis

Period	Obligations	
11/01/79-12/15/84	FY85:	TOTAL: \$360,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bridge, H. S.	GSFC/Wales, R. O.	11-Astronomy

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**NAS 5-26861 Massachusetts Institute of Technology 3212**  
Passive microwave snowpack experiment

Period	Obligations	
01/18/82-12/18/85	FY85:	TOTAL: \$43,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Kong, J. A.	GSFC/Shiue, J. C.	32-Geological Sci

**NAS 5-28564 Massachusetts Institute of Technology 3219**  
Long wavelength photodiode development

Period	Obligations	
08/16/84-03/31/86	FY85: \$145,000	TOTAL: \$231,976
Prin. Invest.	NASA Tech. Officer	CASE Category
Spears, D.	GSFC/Kostiuk, T.	42-Astro Engr
	GSFC/Mumma, M. J.	

**NAS 5-27261 Massachusetts Institute of Technology 3213**  
Conduct a design modification study of the plasma science experiment for adaptability IPL spacecraft

Period	Obligations	
06/01/82-04/30/85	FY85:	TOTAL: \$160,752
Prin. Invest.	NASA Tech. Officer	CASE Category
Lazarus, A. J.	GSFC/Ogilvie, K. W.	13-Physics

**NAS 5-28726 Massachusetts Institute of Technology 3220**  
Solar wind experiment for the wind spacecraft design modification study of the Voyager plasma science

Period	Obligations	
05/01/85-09/30/85	FY85: \$42,551	TOTAL: \$42,551
Prin. Invest.	NASA Tech. Officer	CASE Category
Lazarus, A. J.	GSFC/Ogilvie, K.	11-Astronomy
Goki, K.		

**NAS 5-27339 Massachusetts Institute of Technology 3214**  
The interpretation of crustal dynamics data in terms of plate motion and regional deformation near plate boundaries

Period	Obligations	
09/22/82-09/21/86	FY85: \$130,000	TOTAL: \$320,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Solomon, S. C.	GSFC/Mead, G. D.	32-Geological Sci
Toksoz, N.		

**NAS 5-29116 Massachusetts Institute of Technology 3221**  
X-ray timing Explorer experiment study of the scanning shadow camera and on-board data system

Period	Obligations	
03/22/85-11/30/85	FY85: \$300,000	TOTAL: \$300,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bradt, H.	GSFC/Hibbard, W.	42-Astro Engr

**NAS 5-27575 Massachusetts Institute of Technology 3215**  
X-ray timing Explorer experiment study experiment

Period	Obligations	
06/01/83-03/31/85	FY85: \$5,000	TOTAL: \$200,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bradt, H. V.	GSFC/Hibbard, W. D.	42-Astro Engr
Jernigan, J. G.		

**NAS 5-29120 Massachusetts Institute of Technology 3222**  
Support for the NASA/GSFC crustal dynamics project

Period	Obligations	
03/25/85-01/24/89	FY85: \$2,598,000	TOTAL: \$2,598,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Niell, A. E.	GSFC/Wildes, W.	32-Geological Sci
Rogers, A. E.		

**NAS 5-27591 Massachusetts Institute of Technology 3216**  
Cosmic Background Explorer (COBE) pre-launch science data and post-launch data analysis

Period	Obligations	
08/01/83-12/31/89	FY85: \$257,000	TOTAL: \$504,946
Prin. Invest.	NASA Tech. Officer	CASE Category
Weiss, R.	GSFC/Mather, J.	13-Physics

**NAS 8-27972 Massachusetts Institute of Technology 3223**  
Design, development, and operations of the AXR-2 integrated modulation collimator experiment under the HEAO program

Period	Obligations	
06/23/72-10/31/84	FY85:	TOTAL: \$2,408,923
Prin. Invest.	NASA Tech. Officer	CASE Category
Bradt, H. V.	MSFC/Stone, J. F.	11-Astronomy

**NAS 5-28410 Massachusetts Institute of Technology 3217**  
Support for Jupiter radio astronomy study

Period	Obligations	
05/02/84-05/02/85	FY85:	TOTAL: \$9,934
Prin. Invest.	NASA Tech. Officer	CASE Category
Staelin, D. H.	GSFC/Alexander, J. K.	13-Physics
	GSFC/Kaiser, M. L.	

**NAS 8-27975 Massachusetts Institute of Technology 3224**  
Design and development of the AGR-5 high energy X-ray experiment under the HEAO program

Period	Obligations	
06/23/72-10/31/84	FY85:	TOTAL: \$3,581,695
Prin. Invest.	NASA Tech. Officer	CASE Category
Keith, T. G.	LERC/Corrigan, R. D.	11-Astronomy
Little, R. R.		

**NAS 5-28440 Massachusetts Institute of Technology 3218**  
Provide data analysis and reduction of data from the interplanetary monitoring platform (IMP)-8

Period	Obligations	
10/01/84-09/30/85	FY85: \$75,000	TOTAL: \$75,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bridge, H. S.	GSFC/Wales, R. O.	11-Astronomy

**NAS 8-30752 Massachusetts Institute of Technology 3225**  
Design, development and operations of the HEAO mission B telescope experiment

Period	Obligations	
06/01/74-12/31/84	FY85:	TOTAL: \$4,761,580
Prin. Invest.	NASA Tech. Officer	CASE Category
Clark, G. W.	MSFC/Stone, J. F.	11-Astronomy

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

**NAS 8-34545 Massachusetts Institute of Technology 3226**  
Study for the participation in the science and mission design of  
a large space deployable shuttle based antenna for space VLBI  
mission

<i>Period</i>	<i>Obligations</i>	
07/13/81-07/12/84	FY85:	TOTAL: \$229,137
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Burke, B. F.	GSFC/Morgan, S. H.	11-Astronomy

**NAS 8-34959 Massachusetts Institute of Technology 3227**  
Experiment design for structural assembly demonstration  
experiment

<i>Period</i>	<i>Obligations</i>	
10/18/82-01/31/85	FY85:	TOTAL: \$150,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Akin, D. L.	MSFC/Stokes, J. W.	42-Astro Engr
	MSFC/Hypes, M. C.	

**NAS 8-35018 Massachusetts Institute of Technology 3228**  
Turbine blade-tip seal clearance excitation forces

<i>Period</i>	<i>Obligations</i>	
06/03/83-08/02/86	FY85: \$210,000	TOTAL: \$266,352
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sanchez, M. M.	MSFC/Wilmer, G.	46-Mech Engr
Greitzer, E. M.	MSFC/Aderhold, H.	
Covert, E. E.		

**NAS 8-35412 Massachusetts Institute of Technology 3229**  
Fluid dynamics of crystal melts under reduced gravity

<i>Period</i>	<i>Obligations</i>	
12/03/82-12/23/84	FY85:	TOTAL: \$80,813
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Greenspan, H. P.	MSFC/Yates, I. C.	21-Mathematics

**NAS 8-35996 Massachusetts Institute of Technology 3230**  
An experiment entitled experimental assembly of structures in  
eva ease

<i>Period</i>	<i>Obligations</i>	
06/01/84-03/01/86	FY85: \$200,000	TOTAL: \$600,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Akin, D. L.	MSFC/Adams, W. R.	31-Atmos Sci
Wolf, R.	MSFC/Watkins, J. T.	

**NAS 8-36113 Massachusetts Institute of Technology 3231**  
Designs of large deployable shuttle based space station  
antennas

<i>Period</i>	<i>Obligations</i>	
10/04/84-04/04/85	FY85: \$73,500	TOTAL: \$73,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Burke, B. F.	MSFC/Nein, M. E.	11-Astronomy

**NAS 8-36604 Massachusetts Institute of Technology 3232**  
Growth of gas crystals from the melt in a partially confined  
configuration

<i>Period</i>	<i>Obligations</i>	
03/15/85-13/14/89	FY85: \$145,320	TOTAL: \$145,320
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gatos, H. C.	MSFC/Yates, I. C.	54-Env Biology

**NAS 9-15343 Massachusetts Institute of Technology 3233**  
Definition of Spacelab I experiment on vestibular experiments

<i>Period</i>	<i>Obligations</i>	
04/04/77-09/30/85	FY85: \$19,714	TOTAL: \$1,836,279
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Young, L. R.	JSC/Peck, E. E.	59-Life Sci, NEC

**NAS 9-16523 Massachusetts Institute of Technology 3234**  
Vestibular experiments in Spacelab

<i>Period</i>	<i>Obligations</i>	
01/01/82-11/01/86	FY85: \$626,000	TOTAL: \$1,634,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Baird, J. K.	JSC/Harris, C. D.	59-Life Sci, NEC

**NAS 9-16571 Massachusetts Institute of Technology 3235**  
Applied plasma physics study of plasma-gas interactions

<i>Period</i>	<i>Obligations</i>	
06/01/82-04/30/85	FY85:	TOTAL: \$70,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Montgomery, D. B.	JSC/Chang, F.	13-Physics

**NAS 9-17138 Massachusetts Institute of Technology 3236**  
Telescopic search for small orbital debris

<i>Period</i>	<i>Obligations</i>	
03/01/84-05/01/85	FY85: \$75,000	TOTAL: \$157,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Taff, L. G.	JSC/Kessler, D.	11-Astronomy

**NAS 9-17266 Massachusetts Institute of Technology 3237**  
Biomechanical analysis of eva activities

<i>Period</i>	<i>Obligations</i>	
04/01/85-03/31/86	FY85: \$97,730	TOTAL: \$97,730
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Akin, D.	JSC/Woolford, B. J.	51-Biological Sci

**NAS 9-17371 Massachusetts Institute of Technology 3238**  
Experiments on the etiology and time course of motion sick-  
ness

<i>Period</i>	<i>Obligations</i>	
03/01/85-03/01/86	FY85: \$108,260	TOTAL: \$108,260
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Oman, C. M.	JSC/Harris, J. W.	41-Aero Engr

**NAS 9-17377 Massachusetts Institute of Technology 3239**  
Study of plasma-gas interactions

<i>Period</i>	<i>Obligations</i>	
05/01/85-01/31/86	FY85: \$30,000	TOTAL: \$30,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yan, T. F.	JSC/Chang, F.	13-Physics

**NASW 3651 Massachusetts Institute of Technology 3240**  
Vestibular experiment on the German D-1 mission

<i>Period</i>	<i>Obligations</i>	
09/01/82-11/30/85	FY85: \$438,700	TOTAL: \$1,390,629
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Young, L. R.	HQ-EB/Craemer, D. B.	56-Medical Sciences
	HQ-EB/Chambers, L. P.	

**NASA'S UNIVERSITY PROGRAM  
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**NASW 3904 Massachusetts Institute of Technology 3241**  
Filament wound case technical assessment group

Period	Obligations	
11/15/83-10/31/85	FY85:	TOTAL: \$90,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Mar, S. W.	HQ-MO/Bardos, R.	41-Aero Engr

**NCC 2-231 Massachusetts Institute of Technology 3242**  
Critical review of food processing problems

Period	Obligations	
01/01/83-04/30/86	FY85: \$95,821	TOTAL: \$229,103
Prin. Invest.	NASA Tech. Officer	CASE Category
Karel, M.	ARC/MacElroy, R. D.	59-Life Sci, NEC

**NCC 2-360 Massachusetts Institute of Technology 3243**  
Research in telerobotics

Period	Obligations	
06/01/85-12/31/85	FY85: \$50,000	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Sheridan, T.	ARC/Lum, H.	22-Computer Science

**NCC 2-366 Massachusetts Institute of Technology 3244**  
Improvement of helicopter blade dynamics by active control of the conventional swash plate

Period	Obligations	
11/01/85-10/31/86	FY85: \$49,954	TOTAL: \$49,954
Prin. Invest.	NASA Tech. Officer	CASE Category
Ham, N. D.	ARC/Johnson, W. R.	41-Aero Engr
	ARC/Snyder, P. K.	

**NCC 9-1 Massachusetts Institute of Technology 3245**  
Experiments on the etiology and time course of motion sickness

Period	Obligations	
10/01/81-05/01/85	FY85:	TOTAL: \$318,708
Prin. Invest.	NASA Tech. Officer	CASE Category
Oman, C. M.	JSC/Homick, J. L.	56-Medical Sciences

**NGL 22-009-015 Massachusetts Institute of Technology 3246**  
Theoretical and experimental investigations of interplanetary medium and in gamma ray astronomy

Period	Obligations	
01/01/63-11/30/85	FY85: \$110,000	TOTAL: \$5,356,339
Prin. Invest.	NASA Tech. Officer	CASE Category
Lazarus, A. J.	HQ-EE/Lynch, J. T.	13-Physics
	HQ-EE/Shawhan, S. D.	

**NGL 22-009-124 Massachusetts Institute of Technology 3247**  
Control optimization stabilization and computation of algorithms for space applications

Period	Obligations	
03/30/66-12/31/84	FY85:	TOTAL: \$1,295,289
Prin. Invest.	NASA Tech. Officer	CASE Category
Holt, M.	ARC/Cicolani, L. S.	49-Engr, NEC
Willisky, A. S.	LARC/Elliott, J.	

**NGL 22-009-383 Massachusetts Institute of Technology 3248**  
Research in propulsion and power generation

Period	Obligations	
01/16/69-08/29/85	FY85:	TOTAL: \$1,485,748
Prin. Invest.	NASA Tech. Officer	CASE Category
Cleaver, T. G.	LERC/Strazisar, A. J.	41-Aero Engr
Thompkins, W. T.	LERC/Ball, C. L.	
Epstein, A. H.		

**NGL 22-009-638 Massachusetts Institute of Technology 3249**  
Research in space science

Period	Obligations	
03/03/72-03/31/86	FY85: \$100,000	TOTAL: \$2,705,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Pettengill, G. H.	HQ-E/Rosendhal, J. D.	11-Astronomy
	HQ-EP/Konkel, R. M.	

**NGL 22-009-640 Massachusetts Institute of Technology 3250**  
Joint university research program future air transportation technological needs

Period	Obligations	
11/16/71-01/31/88	FY85: \$99,735	TOTAL: \$953,080
Prin. Invest.	NASA Tech. Officer	CASE Category
Simpson, R. W.	LARC/Hood, R. V.	41-Aero Engr

**NGR 22-009-005 Massachusetts Institute of Technology 3251**  
Detection and identification of organic matter by mass spectrometry

Period	Obligations	
12/01/61-12/31/85	FY85: \$30,000	TOTAL: \$1,589,021
Prin. Invest.	NASA Tech. Officer	CASE Category
Biemann, K.	HQ-EB/Devincenzi, D. L.	
	HQ-EB/Rambler, M. B.	51-Biological Sci

**NGR 22-009-277 Massachusetts Institute of Technology 3252**  
The prebiotic synthesis of polynucleotides and polynucleotide-directed polypeptides

Period	Obligations	
12/01/67-11/30/85	FY85: \$66,000	TOTAL: \$947,370
Prin. Invest.	NASA Tech. Officer	CASE Category
Rich, A.	HQ-EB/Devincenzi, D. L.	12-Chemistry
	HQ-EB/Rambler, M.	

**NGR 22-009-526 Massachusetts Institute of Technology 3253**  
Astronomy in the region between 1 mm to 0.1 mm wavelengths

Period	Obligations	
09/22/70-10/31/85	FY85: \$100,000	TOTAL: \$981,997
Prin. Invest.	NASA Tech. Officer	CASE Category
Weiss, R.	HQ-EZ/Boggess, N. W.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

**NGR 22-009-672 Massachusetts Institute of Technology 3254**  
Ground-based radar study of the Moon and planets

Period	Obligations	
03/06/72-04/30/86	FY85: \$35,000	TOTAL: \$706,943
Prin. Invest.	NASA Tech. Officer	CASE Category
Pettengill, G. H.	HQ-EL/Brinton, H. C.	11-Astronomy
	HQ-EL/Bergstrahl, J. T.	

# **NASA'S UNIVERSITY PROGRAM** **MASSACHUSETTS (Continued)**

## **NGR 22-009-727 Massachusetts Institute of Technology 3255** Study in numerical modeling of atmospheric phenomena

Period	Obligations
02/01/73-12/31/85	FY85: \$150,000 TOTAL: \$1,779,063
Prin. Invest.	NASA Tech. Officer CASE Category
Stone, P. H.	GSFC/Kalhay, E. 31-Atmos Sci

## **NGR 22-009-730 Massachusetts Institute of Technology 3256** X-ray astronomy experiments from sounding rockets

Period	Obligations
03/22/72-08/31/86	FY85: \$185,000 TOTAL: \$2,460,000
Prin. Invest.	NASA Tech. Officer CASE Category
Rappaport, S. A.	GSFC/Early, L. J. 11-Astronomy
Boughan, E.	GSFC/Pless, R. H.
Levine, A.	

## **NGT 22-009-901 Massachusetts Institute of Technology 3257** Training program in computational fluid dynamics

Period	Obligations
01/01/81-05/31/85	FY85: TOTAL: \$381,468
Prin. Invest.	NASA Tech. Officer CASE Category
Murman, E. M.	HQ-RT/Graves, R. A., Jr. 41-Aero Engr

## **NGT 22-009-902 Massachusetts Institute of Technology 3258** NASA graduate student researchers program

Period	Obligations
06/01/81-05/31/84	FY85: TOTAL: \$32,121
Prin. Invest.	NASA Tech. Officer CASE Category
Lewin, W.	HQ-LB/Owens, F. C. 13-Physics

## **NGT 22-009-904 Massachusetts Institute of Technology 3259** NASA graduate student researchers program

Period	Obligations
06/01/85-05/31/86	FY85: \$18,000 TOTAL: \$18,000
Prin. Invest.	NASA Tech. Officer CASE Category
Shapiro, I. I.	HQ-LE/Owens, F. C. 11-Astronomy

## **NSG 1583 Massachusetts Institute of Technology 3260** Research on helicopter rotor harmonic noise and broadband noise

Period	Obligations
12/01/78-08/31/84	FY85: TOTAL: \$356,107
Prin. Invest.	NASA Tech. Officer CASE Category
Harris, W. L.	LARC/Brooks, T. F. 13-Physics
	LARC/Farassat, F.

## **NSG 2010 Massachusetts Institute of Technology 3261** Study of impact on Space Shuttle on stratospheric ozone

Period	Obligations
03/01/74-12/31/84	FY85: TOTAL: \$2,146,907
Prin. Invest.	NASA Tech. Officer CASE Category
Prinn, R. G.	ARC/Whitten, R. C. 31-Atmos Sci
Alyea, F. N.	ARC/Young, R. E.

## **NSG 2142 Massachusetts Institute of Technology 3262** Helicopter rotor noise

Period	Obligations
07/01/76-09/30/83	FY85: TOTAL: \$321,496
Prin. Invest.	NASA Tech. Officer CASE Category
Widnall, S. E.	ARC/Johnson, W. R. 11-Aero Engr

## **NSG 2266 Massachusetts Institute of Technology 3263** An investigation of advanced helicopter rotors having individual-blade-control

Period	Obligations
11/01/77-10/31/85	FY85: TOTAL: \$799,772
Prin. Invest.	NASA Tech. Officer CASE Category
Ham, N. D.	ARC/Johnson, W. R. 41-Aero Engr
	ARC/Warmbrodt, W. G.

## **NSG 2342 Massachusetts Institute of Technology 3264** Opportunity observations of occultations and eclipses

Period	Obligations
11/01/78-10/31/85	FY85: \$7,610 TOTAL: \$261,712
Prin. Invest.	NASA Tech. Officer CASE Category
Elliot, J. L.	ARC/Haughney, L. C. 11-Astronomy

## **NSG 3017 Massachusetts Institute of Technology 3265** Silicon surface phenomena related to energy conversion

Period	Obligations
05/01/74-02/16/86	FY85: \$81,980 TOTAL: \$638,250
Prin. Invest.	NASA Tech. Officer CASE Category
Gatos, H. C.	LERC/Weinberg, I. 47-Materials Engr
	LERC/Swartz, C. K.

## **NSG 3079 Massachusetts Institute of Technology 3266** Development of techniques for turbomachinery flutter clearance

Period	Obligations
07/15/75-12/28/85	FY85: \$45,000 TOTAL: \$558,438
Prin. Invest.	NASA Tech. Officer CASE Category
Crawley, E. F.	LERC/Hoyniak, D. 41-Aero Engr

## **NSG 3208 Massachusetts Institute of Technology 3267** Strut induced aerodynamic forging functions

Period	Obligations
07/05/78-11/26/85	FY85: \$74,988 TOTAL: \$349,791
Prin. Invest.	NASA Tech. Officer CASE Category
Greitzer, E. M.	LERC/Newman, F. A. 41-Aero Engr

## **NSG 5113 Massachusetts Institute of Technology 3268** Research in stratospheric dynamics

Period	Obligations
07/01/76-02/28/86	FY85: \$66,000 TOTAL: \$606,303
Prin. Invest.	NASA Tech. Officer CASE Category
Stone, P. H.	GSFC/Rind, D. 31-Atmos Sci

## **NSG 7081 Massachusetts Institute of Technology 3269** Models of the composition, structure and evolution of the lunar interior

Period	Obligations
06/01/74-02/28/85	FY85: TOTAL: \$1,514,780
Prin. Invest.	NASA Tech. Officer CASE Category
Huguenin, R. L.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

## **NSG 7297 Massachusetts Institute of Technology 3270** Studies of stress history of terrestrial lithospheres

Period	Obligations
01/01/77-12/31/85	FY85: \$153,000 TOTAL: \$451,685
Prin. Invest.	NASA Tech. Officer CASE Category
Solomon, S. C.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.



**NASA'S UNIVERSITY PROGRAM  
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**NSG 7331 Massachusetts Institute of Technology 3271**  
Crystal growth of device quality gallium arsenite in space  
*Period* *Obligations*  
04/01/79-05/31/86 FY85: \$250,000 TOTAL: \$3,120,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gatos, H. C. HQ-EL/Tuyahov, A. J. 19-Phys Sci, NEC

**NSG 7339 Massachusetts Institute of Technology 3272**  
X-ray balloon observations from the Northern and Southern Hemispheres  
*Period* *Obligations*  
04/01/77-11/30/85 FY85: \$281,100 TOTAL: \$1,462,100  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ricker, G. R. HQ-EZ/Kaluzienski, L. J. 11-Astronomy  
HQ-EZ/Ormes, J. F.

**NSG 7526 Massachusetts Institute of Technology 3273**  
Portable high-speed photometry systems for observing occultations  
*Period* *Obligations*  
01/01/79-12/31/85 FY85: \$103,330 TOTAL: \$418,448  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Elliot, J. L. HQ-EL/Brinton, H. C. 11-Astronomy  
HQ-EL/Bergstrahl, J. T.

**NSG 7604 Massachusetts Institute of Technology 3274**  
Electronic spectra of heated lunar materials: Quantifying remote sensed spectra of hot planetary surfaces  
*Period* *Obligations*  
05/01/79-01/31/86 FY85: \$90,375 TOTAL: \$603,717  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Burns, R. G. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NSG 7638 Massachusetts Institute of Technology 3275**  
Mars orbiter and comet mission  
*Period* *Obligations*  
04/15/79-09/30/85 FY85: TOTAL: \$740,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Binsack, J. H. HQ-EL/Quaide, W. L. 31-Atmos Sci  
McCord, T. B. HQ-EL/Vescelus, F.

**NSG 7643 Massachusetts Institute of Technology 3276**  
Experimental and theoretical investigations in high energy astrophysics  
*Period* *Obligations*  
01/01/79-12/31/85 FY85: \$220,000 TOTAL: \$1,069,666  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Clark, G. W. HQ-EZ/Kaluzienski, L. J. 11-Astronomy  
HQ-EZ/Cline, T. L.

**NSG 7645 Massachusetts Institute of Technology 3277**  
Materials processing research base  
*Period* *Obligations*  
10/01/79-09/30/85 FY85: \$654,000 TOTAL: \$4,560,378  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bowen, K. HQ-EN/Oran, W. A. 47-Materials Engr  
HQ-EN/Spears, D. R.

**NAG 1-386 Northeastern University 3278**  
Vibration control design challenges of large space systems  
*Period* *Obligations*  
08/01/83-03/31/85 FY85: TOTAL: \$155,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lin, J. G. LARC/Joshi, S. M. 45-Elec Engr  
LARC/Armstrong, E. S.

**NAG 2-272 Tufts University 3279**  
Muscle fiber atrophy  
*Period* *Obligations*  
11/01/83-10/31/85 FY85: \$89,240 TOTAL: \$179,229  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Goldspink, G. ARC/Ellis, S. 51-Biological Sci

**NAG 5-477 Tufts University 3280**  
Coordinated ultraviolet and radio wavelength observations of selected nearby dwarf stars  
*Period* *Obligations*  
10/01/84-09/30/86 FY85: \$21,000 TOTAL: \$27,329  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lang, K. R. GSFC/Kondo, Y. 11-Astronomy  
Willson, R. F.

**NAG 5-501 Tufts University 3281**  
Simultaneous Solar Maximum Mission and very large array observation of solar active regions  
*Period* *Obligations*  
02/01/85-01/31/86 FY85: \$25,000 TOTAL: \$25,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lang, K. R. GSFC/Bullock, G. D. 13-Physics  
Willson, R. F.

**NAG 1-163 University of Massachusetts - Amherst 3282**  
Analysis of microstrip antennas  
*Period* *Obligations*  
06/01/81-06/30/84 FY85: TOTAL: \$34,074  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pozar, D. M. LARC/Bailey, M. C. 45-Elec Engr  
Schaubert, D. H.

**NAG 1-279 University of Massachusetts - Amherst 3283**  
Near millimeter wave imaging/multi-beam integrated antennas  
*Period* *Obligations*  
06/01/82-09/30/85 FY85: \$50,000 TOTAL: \$204,012  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Yngvesson, K. S. LARC/Kendall, B. M. 45-Elec Engr  
Schaubert, D. H.

**NAG 2-344 University of Massachusetts - Amherst 3284**  
Jets, mass outflows and disks associated with young stellar objects  
*Period* *Obligations*  
03/01/85-02/28/86 FY85: \$25,000 TOTAL: \$25,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Strom, S. E. ARC/Black, D. C. 13-Physics  
ARC/Scargle, J. D.

# **NASA'S UNIVERSITY PROGRAM** **MASSACHUSETTS (Continued)**

## **NAG 5-558 University of Massachusetts - Amherst 3285** Chromospheric activity in an X-ray selected sample of young stars

<i>Period</i>	<i>Obligations</i>	
06/01/85-05/31/86	FY85: \$17,569	TOTAL: \$17,569
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Strom, S.	GSFC/Kondo, Y.	11-Astronomy
Strom, K. M.		

## **NAG 9-75 University of Massachusetts - Amherst 3286** Archean tectonic style

<i>Period</i>	<i>Obligations</i>	
02/01/84-01/31/86	FY85: \$16,000	TOTAL: \$23,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McGill, G. E.	JSC/Phinney, W. C.	32-Geological Sci

## **NAGW 276 University of Massachusetts - Amherst 3287** The mapping of ocean surface currents using dual-frequency microwave radars

<i>Period</i>	<i>Obligations</i>	
01/01/82-03/31/86	FY85: \$40,000	TOTAL: \$220,704
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McIntosh, R. E.	HQ-EE/Patzert, W. C.	33-Oceanography
	HQ-EE/Wilson, W. S.	

## **NAGW 287 University of Massachusetts - Amherst 3288** Microwave remote sensing measurements

<i>Period</i>	<i>Obligations</i>	
01/01/82-10/01/83	FY85:	TOTAL: \$227,415
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Swift, C. T.	HQ-EE/McGoldrick, L. F.	
	HQ-EE/Wilson, W. S.	33-Oceanography

## **NAGW 436 University of Massachusetts - Amherst 3289** Boundary conditions for the paleoenvironment: Chemical and physical processes in the pre-solar nebula

<i>Period</i>	<i>Obligations</i>	
02/15/83-02/14/86	FY85: \$31,389	TOTAL: \$92,662
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Irvine, W. M.	HQ-EB/De Vincenzi, D. L.	
		32-Geological Sci
Schloerb, F. P.	HQ-EB/Rambler, M. B.	

## **NAGW 559 University of Massachusetts - Amherst 3290** Algorithm development to measure sea ice fraction with microwave radiometers

<i>Period</i>	<i>Obligations</i>	
12/01/83-11/30/85	FY85: \$100,526	TOTAL: \$191,526
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Swift, C. T.	HQ-EE/Thomas, R. H.	33-Oceanography
	HQ-EE/Wilson, W. S.	

## **NAGW 570 University of Massachusetts - Amherst 3291** H2O stability and evolution on Mars

<i>Period</i>	<i>Obligations</i>	
03/01/84-02/28/86	FY85: \$35,000	TOTAL: \$69,275
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Huguenin, R. L.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

## **NAGW 623 University of Massachusetts - Amherst 3292** Development of a high sensitivity radiometer system for submillimeter astronomical spectroscopy

<i>Period</i>	<i>Obligations</i>	
06/01/84-05/31/86	FY85:	TOTAL: \$52,864
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Goldsmith, P.	HQ-EZ/Bogges, N. W.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

## **NGL 22-010-023 University of Massachusetts - Amherst 3293** Theoretical studies of diffuse reflection and transmission of radiation in planetary atmospheres

<i>Period</i>	<i>Obligations</i>	
05/24/67-08/31/86	FY85: \$51,782	TOTAL: \$800,011
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Irvine, W. M.	HQ-EL/Brinton, H. C.	11-Astronomy
	HQ-EL/Bergstralh, J. T.	

## **NGR 22-010-076 University of Massachusetts - Amherst 3294** Reconnaissance study of large geologic ring structures on Mars

<i>Period</i>	<i>Obligations</i>	
05/19/70-01/31/86	FY85: \$34,854	TOTAL: \$496,805
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McGill, G. E.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

## **NGT 22-010-800 University of Massachusetts - Amherst 3295** NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
04/15/83-04/15/85	FY85:	TOTAL: \$29,120
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Finn, J. T.	HQ-LB/Owens, F.	49-Engr, NEC

## **NGT 22-010-801 University of Massachusetts - Amherst 3296** NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/84-05/31/85	FY85:	TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hanson, A. R.	HQ-LB/Owens, F. C.	
		22-Computer Science

## **NSG 7405 University of Massachusetts - Amherst 3297** Mineralogy and weathering processes on Mars

<i>Period</i>	<i>Obligations</i>	
10/01/77-12/31/86	FY85: \$15,000	TOTAL: \$250,684
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Huguenin, R. L.	HQ-EL/Boyce, J.	32-Geological Sci
	HQ-EL/Holt, H.	

## **NSG 9069 University of Massachusetts - Amherst 3298** Comparative geochemical and petrological study of lunar and terrestrial basaltic volcanism

<i>Period</i>	<i>Obligations</i>	
05/15/78-02/01/86	FY85:	TOTAL: \$161,345
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rhodes, J. M.	JSC/Dietrich, J. W.	32-Geological Sci

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

**NAG 5-401 Wellesley College 3299**  
Variability of selected peculiar a type stars  
*Period Obligations*  
07/01/84-06/30/86 FY85: TOTAL: \$26,200  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Panek, R. J. GSFC/Kondo, Y. 11-Astronomy  
Holm, A. V.

**NAG 5-517 Woods Hole Oceanographic Institution 3306**  
Cepward continuation of potential fields to geopotential research mission  
*Period Obligations*  
03/15/85-09/15/85 FY85: \$10,523 TOTAL: \$10,523  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Heirtzler, J. R. GSFC/Taylor, P. T. 32-Geological Sci  
GSFC/Schnetzler, C. C.

**NAG 5-438 Wellesley College 3300**  
Search for technetium in barium stars  
*Period Obligations*  
07/15/84-10/31/85 FY85: \$10,700 TOTAL: \$10,700  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Marenin, I. L. GSFC/Kondo, Y. 11-Astronomy  
Carpenter, K. G.

**NAG 5-593 Woods Hole Oceanographic Institution 3307**  
Plate motions and gravity anomalies  
*Period Obligations*  
07/15/85-07/14/86 FY85: \$28,571 TOTAL: \$28,571  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Bowin, O. C. GSFC/Welker, J. E. 32-Geological Sci

**NGT 22-005-900 Wentworth Institute of Technology 3301**  
Massachusetts pre-engineering program  
*Period Obligations*  
06/01/85-09/30/85 FY85: \$24,900 TOTAL: \$24,900  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Mullins, R. T. HQ-U/Coleman, A. M. 41-Aero Engr

**NAG 5-595 Woods Hole Oceanographic Institution 3308**  
Research relative to geomagnetic modeling with harmonic splines  
*Period Obligations*  
09/01/85-08/31/86 FY85: \$30,000 TOTAL: \$30,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Shure, L. GSFC/Kouns, C. W. 32-Geological Sci  
Parker, R. L. GSFC/Langel, R. A.

**NAG 3-610 Western New England College 3302**  
Mixer ejector program  
*Period Obligations*  
03/01/85-02/28/86 FY85: \$51,270 TOTAL: \$51,270  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Presz, W. M. LERC/Bishop, A. R. 41-Aero Engr

**NAG 9-69 Woods Hole Oceanographic Institution 3309**  
Helium isotope studies of diamonds and inclusions within diamonds  
*Period Obligations*  
02/01/84-02/01/86 FY85: \$23,000 TOTAL: \$45,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kurz, M. D. JSC/Phinney, W. C. 32-Geological Sci

**NSG 5376 Wheaton College 3303**  
Ultraviolet spectrophotometry of planetary nebulae  
*Period Obligations*  
07/01/79-01/31/86 FY85: \$15,410 TOTAL: \$51,696  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Barker, T. GSFC/Kondo, Y. 11-Astronomy

**NAGW 272 Woods Hole Oceanographic Institution 3310**  
Research on acoustic profiling of upper ocean currents  
*Period Obligations*  
10/15/81-11/15/84 FY85: TOTAL: \$640,549  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Joyce, T. M. HQ-EE/Patzert, W. C. 33-Oceanography  
HQ-EE/Wilson, W. S.

**NAG 5-281 Woods Hole Oceanographic Institution 3304**  
Satellite-linked ocean observing system  
*Period Obligations*  
10/01/82-10/31/86 FY85: \$300,000 TOTAL: \$1,500,026  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Chase, R. P. GSFC/Kirk, R. G. 33-Oceanography  
Walden, R. G.  
Webb, D. C.

**NAGW 606 Woods Hole Oceanographic Institution 3311**  
Regulation of gethylated gas emission from coastal and inland salt gases  
*Period Obligations*  
02/01/84-11/15/85 FY85: \$99,470 TOTAL: \$136,713  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Dacey, J. H. HQ-EB/Geib, D. S. 51-Biological Sci  
Wake-ham, S. G. HQ-EB/Devincenzi, D. L.  
King, G. M.

**NAG 5-466 Woods Hole Oceanographic Institution 3305**  
The main, crustal and time varying magnetic fields to be observed on a shuttle-spartan mission  
*Period Obligations*  
09/01/84-02/28/85 FY85: TOTAL: \$14,286  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Heirtzler, J. R. GSFC/Taylor, P. T. 32-Geological Sci  
GSFC/Webster, W. J.

**NAGW 792 Woods Hole Oceanographic Institution 3312**  
Analysis of harmonic spline gravity models for Venus and Mars  
*Period Obligations*  
07/15/85-01/30/86 FY85: \$37,969 TOTAL: \$37,969  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Bowin, O. HQ-EL/Scott, D. H. 11-Astronomy  
HQ-EL/Boyce, J. M.

# **NASA'S UNIVERSITY PROGRAM MASSACHUSETTS (Continued)**

**NAS 5-27991 Woods Hole Oceanographic Institution 3313**  
Deformation of the morthers caribbean plate boundary  
*Period Obligations*  
10/04/83-04/04/85 FY85: TOTAL: \$77,712  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Bowin, C. O. GSFC/Mead, G. D. 32-Geological Sci

**NASW 3770 Woods Hole Oceanographic Institution 3314**  
Gravity anomaly maps of mass  
*Period Obligations*  
05/15/83-12/31/84 FY85: TOTAL: \$121,055  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Bowin, C. O. HQ-EL/Quaide, W. L. 11-Astronomy

**NGT 22-014-800 Woods Hole Oceanographic Institution 3315**  
NASA graduate student researchers program  
*Period Obligations*  
06/01/81-05/31/85 FY85: TOTAL: \$125,917  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hollister, C. D. HQ-EE/Thomas, R. H. 33-Oceanography

**NAG 8-504 Worcester Polytechnic Institute 3316**  
Mps technology transfer to U.S. Industries and foreign govern-  
ments  
*Period Obligations*  
12/17/84-09/17/85 FY85: \$17,746 TOTAL: \$17,746  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Tuler, F. R. MSFC/Yarbrough, L. S. 99-Multi-Discip

## **MICHIGAN**

**NAG 1-302 Michigan State University 3317**  
Effects of manipulators on turbulent boundary layer drag  
*Period Obligations*  
11/01/82-03/31/85 FY85: TOTAL: \$110,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Falco, R. E. LARC/Hefner, J. N. 41-Aero Engr  
LARC/Anders, J. B.

**NAG 1-367 Michigan State University 3318**  
Vorticity measurements in the shear layer of a large axisymmetric  
jet  
*Period Obligations*  
05/01/83-06/30/85 FY85: \$800 TOTAL: \$3,800  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Foss, J. F. LARC/Yu, J. C. 41-Aero Engr

**NAG 2-362 Michigan State University 3319**  
Effects of micro-gravity on growth hormone concentration and  
distribution inplants  
*Period Obligations*  
07/01/85-12/31/85 FY85: \$30,000 TOTAL: \$30,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Bandurski, R. S. ARC/Winget, C. M. 51-Biological Sci

**NAG 3-93 Michigan State University 3320**  
A miniature nanosecond spark detector for liquid chromato-  
graphic analysis of crude oils and fuels  
*Period Obligations*  
09/15/80-03/11/85 FY85: TOTAL: \$162,502  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Crouch, S. R. LERC/Seng, G. T. 12-Chemistry

**NAG 3-107 Michigan State University 3321**  
Development and application of triple quadrupole mass spectrom-  
etry for jet fuel characterization  
*Period Obligations*  
10/13/80-04/10/85 FY85: TOTAL: \$258,662  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Enke, C. G. LERC/Seng, G. T. 12-Chemistry

**NAG 3-305 Michigan State University 3322**  
Energy conversion and transfer mechanisms in low molecular  
weight gases  
*Period Obligations*  
11/16/82-11/14/85 FY85: \$75,000 TOTAL: \$250,148  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Asmussen, J. LERC/Nakanishi, S. 19-Phys Sci, NEC  
Hawley, M. C.  
Kerber, R. L.

**NAG 3-399 Michigan State University 3323**  
Improved models for increasing wind penetration, economics  
and operating reliability in a utility  
*Period Obligations*  
04/01/83-06/25/85 FY85: \$1,430 TOTAL: \$141,077  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Schlueter, R. A. LERC/Puthoff, R. L. 45-Elec Engr  
Park, G. L.

**NAG 3-453 Michigan State University 3324**  
Experimental evaluation criteria for uniaxial and biaxial notch  
stress states at elevated temperatures  
*Period Obligations*  
10/01/83-10/29/85 FY85: \$46,000 TOTAL: \$96,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Martin, J. F. LERC/McGaw, M. A. 47-Materials Engr

**NAG 3-530 Michigan State University 3325**  
Ac generator and motor requirements for isolated wecs  
*Period Obligations*  
03/10/84-10/05/85 FY85: TOTAL: \$79,606  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Park, G. L. LERC/Puthoff, R. L. 45-Elec Engr

**NAG 3-574 Michigan State University 3326**  
Studies in forced and unforced plane shear layers  
*Period Obligations*  
10/01/84-11/30/85 FY85: TOTAL: \$59,836  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Foss, J. LERC/Durbin, P. 41-Aero Engr  
LERC/Stone, J.

# **NASA'S UNIVERSITY PROGRAM** **MICHIGAN (Continued)**

**NAG 3-595** **Michigan State University** **3327**  
 Structural vibrational and electronic properties of intercalated graphite fibers  
*Period* *Obligations*  
 01/02/85-01/01/86 FY85: \$35,000 TOTAL: \$35,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Solin, S. A. LERC/Gaier, J. 13-Physics

**NAG 5-291** **Michigan State University** **3328**  
 Investigations of circumstellar dust  
*Period* *Obligations*  
 02/01/83-01/31/85 FY85: TOTAL: \$4,883  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Baird, S. R. GSFC/Kondo, Y. 11-Astronomy

**NAG 5-440** **Michigan State University** **3329**  
 Atomic and molecular observations of stars toward reflection nebulae  
*Period* *Obligations*  
 07/01/84-03/31/85 FY85: TOTAL: \$5,300  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Lien, D. J. GSFC/Kondo, Y. 11-Astronomy

**NAG 5-460** **Michigan State University** **3330**  
 Simultaneous satellite observations of early type contact systems  
*Period* *Obligations*  
 10/01/84-09/30/86 FY85: TOTAL: \$1,200  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Linell, A. GSFC/Kondo, Y. 11-Astronomy  
 Polidan, R.

**NAGW 97** **Michigan State University** **3331**  
 An attempt to localize and identify the gravity sensing mechanism of plants  
*Period* *Obligations*  
 08/01/80-10/31/85 FY85: \$70,228 TOTAL: \$345,067  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bandurski, R. S. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAS 5-27618** **Michigan State University** **3332**  
 Temperature and reflectance monitored from satellites as an indicator of shift and impact of vegetation change  
*Period* *Obligations*  
 05/05/83-12/05/84 FY85: TOTAL: \$40,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bartholic, J. GSFC/Nelson, R. 55-Agriculture Sci

**NAS 5-29157** **Michigan State University** **3333**  
 Temperature and reflectance monitored from satellites as an indicator of shift and impact of vegetation change  
*Period* *Obligations*  
 05/14/85-05/14/86 FY85: \$40,000 TOTAL: \$40,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bartholic, J. GSFC/Nelson, R. 55-Agriculture Sci

**NCC 1-101** **Michigan State University** **3334**  
 Studies on the active control of boundary layer over an airfoil by surface heating and sound feedback  
*Period* *Obligations*  
 08/05/85-08/04/86 FY85: \$11,858 TOTAL: \$11,858  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Yen, D. LARC/Maestrello, L. 41-Aero Engr

**NCC 3-26** **Michigan State University** **3335**  
 Device-circuit interaction with GaAs IMPATT diodes  
*Period* *Obligations*  
 04/01/83-08/31/85 FY85: TOTAL: \$56,952  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Freeman, J. C. LERC/Chomos, G. J. 45-Elec Engr

**NGL 23-004-083** **Michigan State University** **3336**  
 Use of remote sensing for land use policy formulation  
*Period* *Obligations*  
 06/08/72-05/31/86 FY85: \$167,000 TOTAL: \$1,652,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Enslin, W. R. HQ-EE/Tuyahov, A. J. 39-Env Sci, NEC  
 Bartholic, J.

**NGT 23-002-800** **Michigan State University** **3337**  
 NASA graduate student researchers program  
*Period* *Obligations*  
 05/01/85-04/30/86 FY85: \$16,400 TOTAL: \$16,400  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bandurski, R. HQ-LE/Owens, F. C. 19-Phys Sci, NEC

**NSG 7293** **Michigan State University** **3338**  
 Radiative fluid dynamic studies of the Sun and compact H II regions  
*Period* *Obligations*  
 10/01/76-11/30/85 FY85: \$25,000 TOTAL: \$166,492  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Stein, R. F. HQ-EZ/Spicer, D. S. 13-Physics

**NAG 3-216** **Michigan Technological University** **3339**  
 Structure property effects of tantalum additions to nickel-base superalloys  
*Period* *Obligations*  
 10/20/81-10/19/85 FY85: TOTAL: \$298,522  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Heckel, R. W. LERC/Dreshfield, R. L. 12-Chemistry  
 Pletka, B. J.

**NAG 3-244** **Michigan Technological University** **3340**  
 Combined effects of surface oxidation and coating/substrate interdiffusion of coating performance  
*Period* *Obligations*  
 12/20/81-06/17/85 FY85: TOTAL: \$122,774  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Heckel, R. W. LERC/Gedwill, M. A. 47-Materials Engr

**NAG 3-326** **Michigan Technological University** **3341**  
 A dynamic analysis of rotary combustion engine seals  
*Period* *Obligations*  
 09/20/82-09/19/83 FY85: TOTAL: \$24,990  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Vilmann, C. LERC/Schock, H. J. 46-Mech Engr

**NASA'S UNIVERSITY PROGRAM**  
**MICHIGAN (Continued)**

**NAG 3-344 Michigan Technological University 3342**  
Investigation of effect of speed of movement of dynamic loads  
on deflection of spur gear teeth  

Period	Obligations
01/01/83-08/28/84	FY85: TOTAL: \$46,149
Prin. Invest.	NASA Tech. Officer
Passerello, C. E.	LERC/Coy, J. J. 46-Mech Engr

**NGT 23-001-800 Michigan Technological University 3349**  
NASA graduate student researchers program  

Period	Obligations
06/01/84-05/31/86	FY85: \$18,000 TOTAL: \$33,000
Prin. Invest.	NASA Tech. Officer
Bornhorst, T. J.	HQ-LB/Owens, F. C. 32-Geological Sci

**NAG 3-456 Michigan Technological University 3343**  
Deformation analysis of rotary combustion engine housings  

Period	Obligations
09/01/83-01/31/86	FY85: \$44,645 TOTAL: \$104,675
Prin. Invest.	NASA Tech. Officer
Vilman, C.	LERC/Lee, C. 46-Mech Engr
Passerello, C. E.	

**NAG 1-93 University of Michigan - Ann Arbor 3350**  
Halogen occultation experiment  

Period	Obligations
07/17/80-03/31/86	FY85: \$51,772 TOTAL: \$178,463
Prin. Invest.	NASA Tech. Officer
Drayson, S. R.	LARC/Sullivan, E. M. 31-Atmos Sci
	LARC/Russell, J. M., III

**NAG 3-504 Michigan Technological University 3344**  
Simulation of jet engine burner line an integrated analytical and  
experimental  

Period	Obligations
12/21/83-12/31/84	FY85: TOTAL: \$19,995
Prin. Invest.	NASA Tech. Officer
Arbabi, F.	LERC/Thompson, R. L. 41-Aero Engr
	LERC/Johns, R. H.

**NAG 1-296 University of Michigan - Ann Arbor 3351**  
The performance and evaluation of real-time multicomputer  
control systems  

Period	Obligations
09/01/82-12/31/85	FY85: \$128,885 TOTAL: \$320,451
Prin. Invest.	NASA Tech. Officer
Shin, K. G.	LARC/Butler, R. W. 22-Computer Science
Kim, B. K.	LARC/Lupton, A. O.

**NAG 3-519 Michigan Technological University 3345**  
Raman structural studies of the nickel electrode  

Period	Obligations
02/20/84-02/18/86	FY85: \$25,000 TOTAL: \$50,013
Prin. Invest.	NASA Tech. Officer
Cornilsen, B. C.	LERC/Singer, J. 12-Chemistry
	LERC/O'donnell, P.

**NAG 1-487 University of Michigan - Ann Arbor 3352**  
Improved plastic track detectors for the study of ultraheavy  
cosmic rays  

Period	Obligations
06/01/84-10/31/84	FY85: TOTAL: \$34,374
Prin. Invest.	NASA Tech. Officer
Tarle, G.	LARC/Jones, J. L. 11-Astronomy

**NAG 3-560 Michigan Technological University 3346**  
Development and prevention of channel segregation during alloy  
solidification  

Period	Obligations
06/05/84-06/03/86	FY85: \$51,721 TOTAL: \$100,427
Prin. Invest.	NASA Tech. Officer
Hellawell, A.	LERC/Dreshfield, R. L. 47-Materials Engr

**NAG 1-492 University of Michigan - Ann Arbor 3353**  
Design and evaluation of flight crucial control computers  

Period	Obligations
09/01/84-08/31/86	FY85: \$20,000 TOTAL: \$39,884
Prin. Invest.	NASA Tech. Officer
Shin, K. G.	LARC/Butler, R. W. 22-Computer Science
	LARC/Lupton, A. O.

**NAG 8-479 Michigan Technological University 3347**  
Mass distribution of CD galaxies and X-ray spectra of Seyfert  
galaxies studies  

Period	Obligations
06/11/84-08/31/85	FY85: TOTAL: \$20,312
Prin. Invest.	NASA Tech. Officer
Kriss, G. A.	MSFC/Johnson, W. G. 11-Astronomy

**NAG 1-539 University of Michigan - Ann Arbor 3354**  
Application of climate models to study the time and space  
variability of the Earth radiation budget  

Period	Obligations
01/01/85-12/31/85	FY85: \$37,496 TOTAL: \$37,496
Prin. Invest.	NASA Tech. Officer
Bartman, F. L.	LARC/Smith, G. L. 31-Atmos Sci

**NAS 8-33727 Michigan Technological University 3348**  
Materials processing in space experiment. The influence of  
gravity on the solidification of monotectic alloys  

Period	Obligations
09/01/80-08/31/83	FY85: TOTAL: \$126,523
Prin. Invest.	NASA Tech. Officer
Hellawell, A.	MSFC/Reeves, F. A. 19-Phys Sci, NEC
	MSFC/Williams, J. R.

**NAG 1-555 University of Michigan - Ann Arbor 3355**  
Investigation of optical guiding in strained semiconductors  

Period	Obligations
01/03/85-01/02/86	FY85: \$53,860 TOTAL: \$53,860
Prin. Invest.	NASA Tech. Officer
Bhattacharya, P. K.	LARC/Clark, I. O. 45-Elec Engr

**NASA'S UNIVERSITY PROGRAM**  
**MICHIGAN (Continued)**

**NAG 1-607 University of Michigan - Ann Arbor 3356**  
 Micro and macro approach to tough polymers for composites

Period	Obligations
07/12/85-12/11/86	FY85: \$100,000 TOTAL: \$100,000
Prin. Invest.	NASA Tech. Officer CASE Category
Yee, A. F.	LARC/Johnston, N. J. 47-Materials Engr
	LARC/Hinkley, J. A.

**NAG 3-294 University of Michigan - Ann Arbor 3363**  
 Monte Carlo calculations of nonreacting and reacting elliptic flows

Period	Obligations
06/10/82-10/01/85	FY85: TOTAL: \$44,132
Prin. Invest.	NASA Tech. Officer CASE Category
Radhakrishnan, K.	LERC/Bittker, D. 46-Mech Engr

**NAG 2-185 University of Michigan - Ann Arbor 3357**  
 Investigations of otolith responses using ground based vestibular research facility

Period	Obligations
07/01/82-06/30/86	FY85: \$17,421 TOTAL: \$83,319
Prin. Invest.	NASA Tech. Officer CASE Category
Anderson, D. J.	ARC/Daunton, N. 12-Chemistry
Correia, M. J.	

**NAG 3-388 University of Michigan - Ann Arbor 3364**  
 Computer analysis and design applicable to contact problems in jet engines blade-hub interface (RWT/broach optimization)

Period	Obligations
01/30/83-10/29/85	FY85: \$57,361 TOTAL: \$177,731
Prin. Invest.	NASA Tech. Officer CASE Category
Kikuchi, N.	LERC/Steinmetz, B. 41-Aero Engr
Taylor, J.	LERC/Chamis, C. C.

**NAG 2-259 University of Michigan - Ann Arbor 3358**  
 Scientific library for the Cray-2

Period	Obligations
10/01/83-08/31/86	FY85: \$47,000 TOTAL: \$67,000
Prin. Invest.	NASA Tech. Officer CASE Category
Calahan, D. A.	ARC/Perdue, J. N. 22-Computer Science
	ARC/Senzig, D. N.

**NAG 3-403 University of Michigan - Ann Arbor 3365**  
 Studies of two-phase heat transfer under reduced gravity

Period	Obligations
04/01/83-12/29/85	FY85: \$45,390 TOTAL: \$112,386
Prin. Invest.	NASA Tech. Officer CASE Category
Merte, H., Jr.	LERC/Vernon, R. W. 13-Physics

**NAG 2-325 University of Michigan - Ann Arbor 3359**  
 Mammalian gravity receptors structure and metabolism

Period	Obligations
11/01/84-10/31/85	FY85: \$64,350 TOTAL: \$64,350
Prin. Invest.	NASA Tech. Officer CASE Category
Ross, M. D.	ARC/Corcoran, M. L. 51-Biological Sci

**NAG 3-494 University of Michigan - Ann Arbor 3366**  
 A laboratory study of the scuff prevention properties of ceramics with application to cylinder walls of high temperature (adiaratic) diesel engines

Period	Obligations
11/27/83-11/26/84	FY85: TOTAL: \$49,109
Prin. Invest.	NASA Tech. Officer CASE Category
Ludema, K. C.	LARC/Wedeven, L. D. 46-Mech Engr

**NAG 2-333 University of Michigan - Ann Arbor 3360**  
 Computer assisted analysis and modeling of gravity receptors

Period	Obligations
02/01/85-01/31/86	FY85: \$172,000 TOTAL: \$172,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ross, M. D.	ARC/Daunton, N. G. 51-Biological Sci
	ARC/Corcoran, M. L.

**NAG 3-589 University of Michigan - Ann Arbor 3367**  
 Study of forced convection boiling under reduced gravity

Period	Obligations
01/02/85-01/01/86	FY85: \$65,083 TOTAL: \$65,083
Prin. Invest.	NASA Tech. Officer CASE Category
Merte, H., Jr.	LERC/Miller, C. D. 46-Mech Engr

**NAG 2-350 University of Michigan - Ann Arbor 3361**  
 Intelligent multi sensor integration

Period	Obligations
05/01/85-09/30/85	FY85: \$44,447 TOTAL: \$44,447
Prin. Invest.	NASA Tech. Officer CASE Category
Volz, R. A.	ARC/Ciffone, D. L. 22-Computer Science
Jain, R.	ARC/Lum, H.
Scott, P.	

**NAG 3-618 University of Michigan - Ann Arbor 3368**  
 Microwave and millimeter wave power generation

Period	Obligations
02/28/85-02/27/86	FY85: \$69,736 TOTAL: \$69,736
Prin. Invest.	NASA Tech. Officer CASE Category
Haddad, G. I.	LERC/Bhasin, K. B. 45-Elec Engr

**NAG 3-185 University of Michigan - Ann Arbor 3362**  
 Research on social aspects of photovoltaic applications

Period	Obligations
05/25/81-02/27/86	FY85: TOTAL: \$322,464
Prin. Invest.	NASA Tech. Officer CASE Category
Roberts, A. F.	LERC/Marsik, S. J. 79-Soc Sci, NEC
	LERC/Bifano, W. J.

**NAG 3-663 University of Michigan - Ann Arbor 3369**  
 Fundamental study of nucleate pool boiling under microgravity

Period	Obligations
10/05/85-12/04/86	FY85: \$120,000 TOTAL: \$120,000
Prin. Invest.	NASA Tech. Officer CASE Category
Merte, H., Jr.	LERC/Salzman, J. A. 46-Mech Engr
Weinzierl, A.	

# **NASA'S UNIVERSITY PROGRAM** **MICHIGAN (Continued)**

**NAG 5-230 University of Michigan - Ann Arbor 3370**  
Intercomparison measurement between rocket-borne and balloon-borne chemiluminescent nitricoxide payloads

Period	Obligations	
04/01/82-07/31/86	FY85: \$57,446	TOTAL: \$268,915
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Horvath, J. J.	GSFC/Frederick, J.	31-Atmos Sci
Shetter, R. E.	HQ-EE/Demore, W. B.	

**NAG 5-251 University of Michigan - Ann Arbor 3371**  
Observations of a symbiotic star in eclipse and two mass transfer X-ray binaries

Period	Obligations	
08/01/82-01/31/86	FY85:	TOTAL: \$10,680
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cowley, C. R.	GSFC/Kondo, Y.	11-Astronomy
Hutchings, J. B.		

**NAG 5-324 University of Michigan - Ann Arbor 3372**  
Hydrogen line ratios in Seyfert galaxies and low redshift quasars

Period	Obligations	
06/01/83-07/31/84	FY85:	TOTAL: \$8,359
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kriss, G. A.	GSFC/Kondo, Y.	11-Astronomy

**NAG 5-419 University of Michigan - Ann Arbor 3373**  
Research relative to advanced langmun probes

Period	Obligations	
05/01/84-04/30/86	FY85: \$23,824	TOTAL: \$47,361
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carignan, G. R.	GSFC/Brace, L. H.	31-Atmos Sci

**NAG 5-442 University of Michigan - Ann Arbor 3374**  
Hot stars association: Contamination in spectra of a selected supernova

Period	Obligations	
08/01/84-08/31/85	FY85:	TOTAL: \$5,489
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kirshner, R. P.	GSFC/Kondo, Y.	11-Astronomy
Panagia, N.		

**NAG 5-465 University of Michigan - Ann Arbor 3375**  
Dynamic and thermodynamic analyses of the neutral upper atmosphere

Period	Obligations	
10/01/84-09/30/86	FY85: \$681,200	TOTAL: \$764,175
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hays, P. B.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

**NAG 5-472 University of Michigan - Ann Arbor 3376**  
Dynamics Explorer investigations

Period	Obligations	
10/01/84-09/30/86	FY85: \$117,577	TOTAL: \$235,541
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nagy, A. F.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

**NAG 5-473 University of Michigan - Ann Arbor 3377**  
Interferometer studies of nighttime hydroxyl bonds

Period	Obligations	
10/01/84-03/31/86	FY85:	TOTAL: \$30,180
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Abreu, V. J.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
Skinner, W. R.	GSFC/Hoffman, R. A.	

**NAG 5-480 University of Michigan - Ann Arbor 3378**  
Characterization of the microwave extinction properties of vegetation canopies

Period	Obligations	
11/01/84-04/30/86	FY85: \$137,615	TOTAL: \$137,615
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ulaby, F. T.	GSFC/Schmugge, T.	55-Agriculture Sci

**NAG 5-482 University of Michigan - Ann Arbor 3379**  
Neutral composition studies of thermospheric processes

Period	Obligations	
10/01/84-09/30/86	FY85: \$281,136	TOTAL: \$281,136
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carignan, G. R.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

**NAG 5-552 University of Michigan - Ann Arbor 3380**  
Observations of narrow lined Seyfert galaxies

Period	Obligations	
06/01/85-05/31/86	FY85: \$10,878	TOTAL: \$10,878
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
MacAlpine, G. M.	GSFC/Kondo, Y.	11-Astronomy
Eastman, R. G.		

**NAG 5-565 University of Michigan - Ann Arbor 3381**  
The interaction of the solar wind with comet geocobine-zinnec

Period	Obligations	
07/01/85-06/30/86	FY85: \$28,000	TOTAL: \$28,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cravens, T.	GSFC/Wales, R. O.	11-Astronomy

**NAG 5-615 University of Michigan - Ann Arbor 3382**  
Ground-based observations of equatorial thermospheric dynamics with a Fabry-Perot interferometer in the project condor campaign (March 1983)

Period	Obligations	
12/01/82-12/31/84	FY85:	TOTAL: \$42,058
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Meriwether, J. W.	GSFC/Early, L. J.	13-Physics
	GSFC/Pless, R. H.	

**NAG 8-535 University of Michigan - Ann Arbor 3383**  
Observational study of ion-electron equilibration and of cloud evaporation in supernova remnants under the HEAO-2 guest investigator program

Period	Obligations	
06/01/85-05/31/86	FY85: \$12,024	TOTAL: \$12,024
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Teske, R. G.	MSFC/Johnson, W. G.	11-Astronomy



**NASA'S UNIVERSITY PROGRAM**  
**MICHIGAN (Continued)**

**NAGW 15 University of Michigan - Ann Arbor 3384**  
Study in planetary aeronomy

<i>Period</i>	<i>Obligations</i>	
12/01/79-11/30/85	FY85: \$46,022	TOTAL: \$310,055
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cravens, T. E.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 32 University of Michigan - Ann Arbor 3385**  
Horizontal mapping of the thermal structures of the mesospheres at 85 and 97 kilometers

<i>Period</i>	<i>Obligations</i>	
02/01/80-12/31/84	FY85:	TOTAL: \$195,811
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Meriwether, J. W.	HQ-EE/Hampson, R. F.	31-Atmos Sci
	HQ-EE/Demore, W. B.	

**NAGW 34 University of Michigan - Ann Arbor 3386**  
Investigation of the negative geotropic response in geosensitive pulvini of the oat plant (avena sativa)

<i>Period</i>	<i>Obligations</i>	
02/01/80-01/31/86	FY85: \$55,400	TOTAL: \$290,904
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kaufman, P. B.	HQ-EB/Halstead, T. W.	51-Biological Sci

**NAGW 176 University of Michigan - Ann Arbor 3387**  
Interaction of biota and atmosphere: The geological record

<i>Period</i>	<i>Obligations</i>	
04/01/81-10/01/85	FY85: \$106,000	TOTAL: \$430,446
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Walker, J. C.	HQ-EB/Devincenzi, D. L.	12-Chemistry
	HQ-EB/Rambler, M.	

**NAGW 252 University of Michigan - Ann Arbor 3388**  
Interdisciplinary study of Precambrian paleobiology

<i>Period</i>	<i>Obligations</i>	
10/01/81-06/30/85	FY85:	TOTAL: \$171,082
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hayes, J. M.	HQ-EB/Devincenzi, D. L.	32-Geological Sci
Klein, C.	HQ-EB/Rambler, M. B.	
Schopf, J. W.		

**NAGW 312 University of Michigan - Ann Arbor 3389**  
Atmospheric effects of auroral precipitation on Jupiter

<i>Period</i>	<i>Obligations</i>	
04/01/82-03/31/86	FY85:	TOTAL: \$109,136
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cravens, T. E.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 496 University of Michigan - Ann Arbor 3390**  
Visible airglow experiment data analysis

<i>Period</i>	<i>Obligations</i>	
06/01/83-05/31/86	FY85:	TOTAL: \$115,159
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hays, P. B.	HQ-EE/Behannon, K. W.	13-Physics
Abreu, V. J.	HQ-EE/Shawhan, S. D.	

**NAGW 514 University of Michigan - Ann Arbor 3391**  
Balloon launch support for test flight high resolution Doppler image (HRDI)

<i>Period</i>	<i>Obligations</i>	
09/15/83-12/31/83	FY85:	TOTAL: \$13,073
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hays, P. B.	HQ-EE/Watson, R. T.	31-Atmos Sci

**NAGW 631 University of Michigan - Ann Arbor 3392**  
Participation in the Mars 88 mission

<i>Period</i>	<i>Obligations</i>	
06/01/84-06/30/86	FY85: \$52,240	TOTAL: \$97,240
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nagy, A. F.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Quaide, W. L.	

**NAGW 733 University of Michigan - Ann Arbor 3393**  
Application of radar remote sensing to forest biome discrimination, classification and assessment

<i>Period</i>	<i>Obligations</i>	
03/01/85-03/28/86	FY85: \$100,000	TOTAL: \$100,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fawwaz, F. T.	HQ-EE/Tuyahov, A. J.	39-Env Sci, NEC

**NAS 1-17008 University of Michigan - Ann Arbor 3394**  
High-toughness graphite/epoxy composite material experiment for the long duration exposure facility (LDEF)

<i>Period</i>	<i>Obligations</i>	
07/29/82-10/31/85	FY85: \$15,394	TOTAL: \$37,394
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Felbeck, D. K.	LARC/Kinard, W. H.	47-Materials Engr

**NAS 1-17820 University of Michigan - Ann Arbor 3395**  
Manufacture of the cr-39 and rodyne-p plastic sheets required for test and for flight heavy nuclei collection (HNC) detector stacks on the LDEF mission II

<i>Period</i>	<i>Obligations</i>	
09/28/84-07/27/86	FY85: \$395,359	TOTAL: \$467,015
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tarle, G.	LARC/Jones, J. L.	11-Astronomy

**NAS 2-9126 University of Michigan - Ann Arbor 3396**  
Interdisciplinary scientist, Pioneer Venus program

<i>Period</i>	<i>Obligations</i>	
02/10/76-09/30/85	FY85: \$131,382	TOTAL: \$848,937
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Donahue, T. M.	ARC/Fimmel, R. O.	11-Astronomy
	ARC/Craig, R. A.	

**NAS 2-9130 University of Michigan - Ann Arbor 3397**  
Interdisciplinary scientist, Pioneer Venus program

<i>Period</i>	<i>Obligations</i>	
02/09/76-09/30/85	FY85: \$110,578	TOTAL: \$663,012
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nagy, A. F.	ARC/Craig, R. A.	11-Astronomy
	ARC/Fimmel, R. O.	

**NASA'S UNIVERSITY PROGRAM**  
**MICHIGAN (Continued)**

**NAS 2-10535 University of Michigan - Ann Arbor 3398**  
 Study of effects of space travel on mammalian gravity receptors

Period	Obligations	
01/17/80-03/31/87	FY85: \$90,135	TOTAL: \$376,317
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ross, M.	ARC/Ferandin, J. A.	51-Biological Sci
	ARC/Chee, O. K.	

**NAS 5-25002 University of Michigan - Ann Arbor 3399**  
 Wind and temperature spectrometer for the Dynamics Explorer spacecraft

Period	Obligations	
03/30/78-09/30/86	FY85: \$10,105	TOTAL: \$727,779
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carignan, G. R.	GSFC/Spencer, N. W.	31-Atmos Sci

**NAS 5-25031 University of Michigan - Ann Arbor 3400**  
 Develop, fabricate, test, and support hardware for the San Marco/wind and temperature experiment

Period	Obligations	
05/05/78-09/30/87	FY85: \$70,733	TOTAL: \$1,030,406
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carignan, G. R.	GSFC/Spencer, N. W.	31-Atmos Sci
Maurer, J. M.	GSFC/Adkins, R.	

**NAS 5-25038 University of Michigan - Ann Arbor 3401**  
 Theory formulation and analysis support for the Dynamics Explorer spacecraft

Period	Obligations	
08/22/78-03/31/85	FY85:	TOTAL: \$339,021
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nagy, A. F.	GSFC/Bullock, G. D.	11-Astronomy
Odom, E. M.		

**NAS 5-25153 University of Michigan - Ann Arbor 3402**  
 Fabrication of electronic system for the Galileo probe neutral mass spectrometer

Period	Obligations	
08/10/78-11/01/84	FY85:	TOTAL: \$1,490,188
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carignan, G.	GSFC/Niemann, H.	31-Atmos Sci
	GSFC/Way, S. R.	

**NAS 5-25691 University of Michigan - Ann Arbor 3403**  
 Data analysis for Fabry-Perot interferometer for Dynamics Explorer project

Period	Obligations	
02/10/80-09/30/84	FY85:	TOTAL: \$796,389
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hays, P. B.	GSFC/Bullock, G. D.	41-Aero Engr

**NAS 5-26069 University of Michigan - Ann Arbor 3404**  
 NACS experiment for Dynamics Explorer project

Period	Obligations	
02/10/80-03/31/85	FY85:	TOTAL: \$373,338
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carignan, G. R.	GSFC/Bullock, G. D.	11-Astronomy

**NAS 5-26169 University of Michigan - Ann Arbor 3405**  
 Definition phase of the high resolution Doppler image (HRDI) for the upper atmosphere research satellites program (UARS)

Period	Obligations	
09/24/80-11/30/83	FY85: \$21,882	TOTAL: \$2,157,962
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hays, P. B.	GSFC/Brown, W. H., Jr.	31-Atmos Sci

**NAS 5-27305 University of Michigan - Ann Arbor 3406**  
 Design study of advanced lang muir probe bread board

Period	Obligations	
07/16/82-09/30/83	FY85:	TOTAL: \$14,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Unavailable	GSFC/Brace, L. H.	45-Elec Engr

**NAS 5-27751 University of Michigan - Ann Arbor 3407**  
 High resolution Doppler imager (HRDI) for UARS

Period	Obligations	
10/01/83-06/01/88	FY85: \$3,171,118	TOTAL: \$5,472,131
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hays, P.	GSFC/Browne, W.	31-Atmos Sci
	GSFC/Donley, J.	

**NAS 5-28436 University of Michigan - Ann Arbor 3408**  
 Testing integration and field support of the Galileo probe mass spectrometer (GPMS) electronics

Period	Obligations	
11/01/84-11/01/85	FY85: \$78,726	TOTAL: \$78,726
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carignan, G.	GSFC/Way, S.	31-Atmos Sci

**NAS 5-28755 University of Michigan - Ann Arbor 3409**  
 LANDSAT investigation entitled estimating population size of pygoscelid penguins from TM

Period	Obligations	
07/18/85-11/18/86	FY85: \$70,155	TOTAL: \$70,155
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Olsen, C. E.	GSFC/Oseroff, H.	51-Biological Sci
Benninghoff, W. S.		
Schwaller, M. R.		

**NAS 8-32661 University of Michigan - Ann Arbor 3410**  
 Spacelab outgassing

Period	Obligations	
09/20/77-02/28/86	FY85: \$33,138	TOTAL: \$382,565
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carignan, G. R.	MSFC/Miller, E. R.	39-Env Sci, NEC
	MSFC/Wills, F. D.	

**NAS 8-34533 University of Michigan - Ann Arbor 3411**  
 Retarding ion mass spectrometer (RIMS) data analysis

Period	Obligations	
09/02/81-06/30/84	FY85:	TOTAL: \$37,926
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nagy, A. F.	MSFC/Fields, S. A.	13-Physics

**NASA'S UNIVERSITY PROGRAM**  
**MICHIGAN (Continued)**

**NAS 9-15244 University of Michigan - Ann Arbor 3412**  
 Evaluations of postural mechanisms under dynamic conditions  
*Period Obligations*  
 02/01/77-02/01/85 FY85: TOTAL: \$360,069  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Anderson, D. J. JSC/Hornick, J. L. 56-Medical Sciences

**NAS 9-15375 University of Michigan - Ann Arbor 3413**  
 Definition of Spacelab I experiment for adaptation of vestibulo-  
 spinal reflex mechanisms during space flight  
*Period Obligations*  
 06/01/77-01/01/85 FY85: TOTAL: \$281,345  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Anderson, D. J. JSC/Peck, E. E. 51-Biological Sci

**NAS 9-17245 University of Michigan - Ann Arbor 3414**  
 Evaluate postural position under dyn cnt  
*Period Obligations*  
 09/01/84-12/01/85 FY85: \$45,000 TOTAL: \$45,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Anderson, D. JSC/Hornick, J. L. 56-Medical Sciences

**NCA 2-440301 University of Michigan - Ann Arbor 3415**  
 Evaluating head-up display data: Eye focus versus decision  
 time  
*Period Obligations*  
 06/01/83-04/30/85 FY85: TOTAL: \$39,232  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Weintraub, D. J. ARC/Haines, R. F. 61-Biol Aspects

**NCA 2-440302 University of Michigan - Ann Arbor 3416**  
 Silicon microvalve technology for micromachined integrated  
 sensors  
*Period Obligations*  
 09/01/83-08/31/85 FY85: TOTAL: \$49,558  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wise, D. ARC/Carle, G. C. 31-Atmos Sci

**NCC 1-76 University of Michigan - Ann Arbor 3417**  
 Application of satellite radiation budget measurements to study  
 climate processes of the Earth  
*Period Obligations*  
 01/01/83-02/28/85 FY85: TOTAL: \$60,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bartman, F. L. LARC/Smith, G. L. 31-Atmos Sci  
 LARC/Costen, R. C.

**NCC 2-201 University of Michigan - Ann Arbor 3418**  
 Microprocessor studies in computational chemistry  
*Period Obligations*  
 08/01/82-09/20/84 FY85: TOTAL: \$75,626  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Calahan, D. A. ARC/Arnold, J. O. 22-Computer Science  
 ARC/Bauschlicher, C. W.

**NGR 23-005-015 University of Michigan - Ann Arbor 3419**  
 Theoretical investigation of space charge waves in ionosphere  
 and space plasma sheaths  
*Period Obligations*  
 10/28/63-06/30/85 FY85: TOTAL: \$2,451,461  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Nagy, A. F. HQ-EE/Lynch, J. T. 13-Physics  
 HQ-EE/Shawhan, S. D.

**NGR 23-005-320 University of Michigan - Ann Arbor 3420**  
 Theoretical and experimental studies of spacecraft space plasma  
 interactions  
*Period Obligations*  
 01/29/69-11/30/85 FY85: \$50,000 TOTAL: \$800,557  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Samir, U. HQ-EE/Lynch, J. T. 13-Physics  
 HQ-EE/Shawhan, S. D.

**NGR 23-005-360 University of Michigan - Ann Arbor 3421**  
 A program in aeronomy  
*Period Obligations*  
 12/29/69-01/31/86 FY85: \$188,443 TOTAL: \$2,701,543  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Sharp, W. E. GSFC/Early, L. J. 13-Physics  
 GSFC/Pless, R. H.

**NGT 23-005-801 University of Michigan - Ann Arbor 3422**  
 NASA graduate student researchers program  
*Period Obligations*  
 05/15/84-07/31/86 FY85: \$17,000 TOTAL: \$30,700  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Shin, K. G. HQ-LB/Owens, F. C. 41-Aero Engr

**NGT 23-005-802 University of Michigan - Ann Arbor 3423**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/84-05/31/86 FY85: \$150,000 TOTAL: \$399,922  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Snyder, R. G. HQ-LB/Owens, F. C. 49-Engr, NEC

**NSG 1607 University of Michigan - Ann Arbor 3424**  
 Heat generation during cornering and breaking in aircraft tires  
*Period Obligations*  
 09/01/79-12/31/85 FY85: \$49,435 TOTAL: \$308,363  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Clark, S. K. LARC/Tanner, J. A. 41-Aero Engr

**NSG 5189 University of Michigan - Ann Arbor 3425**  
 Direct measurements of photolysis rates of stratospheric  
 constituents  
*Period Obligations*  
 08/01/77-09/14/84 FY85: TOTAL: \$480,608  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Horvath, J. J. GSFC/Reed, E. I. 31-Atmos Sci  
 Shetter, R. E.

**NASA'S UNIVERSITY PROGRAM**  
**MICHIGAN (Continued)**

**NSG 7308 University of Michigan - Ann Arbor 3426**  
The physical and chemical properties of the prebiotic atmosphere

<i>Period</i>	<i>Obligations</i>	
02/01/77-01/31/85	FY85: TOTAL: \$213,911	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kuhn, W. R.	HQ-EB/Devincenzi, D. L.	12-Chemistry
	HQ-EB/Rambler, M. B.	

**NSG 7404 University of Michigan - Ann Arbor 3427**  
A program for research in planetary atmospheres

<i>Period</i>	<i>Obligations</i>	
10/01/77-01/31/86	FY85: \$117,019 TOTAL: \$694,699	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Atreya, S. K.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NSG 9047 University of Michigan - Ann Arbor 3428**  
Mammalian gravity receptors: Structure and metabolism

<i>Period</i>	<i>Obligations</i>	
11/01/76-10/31/85	FY85: \$26,666 TOTAL: \$455,535	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ross, M. D.	HQ-EB/Halstead, T. W.	51-Biological Sci

**NAG 1-460 Wayne State University 3429**  
Analysis of the leading edge effects on the boundary layer transition

<i>Period</i>	<i>Obligations</i>	
03/01/84-05/31/86	FY85: \$10,385 TOTAL: \$20,770	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chow, P.	LARC/Maestrello, L.	41-Aero Engr

**NAG 2-39 Wayne State University 3430**  
Development of absorption technique for OH measurements in ambient air

<i>Period</i>	<i>Obligations</i>	
05/01/80-09/30/86	FY85: TOTAL: \$644,800	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wang, C. C.	ARC/Margozzi, A. P.	31-Atmos Sci

**NCC 2-230 Wayne State University 3431**  
Analysis of error identification and description in full flight simulation

<i>Period</i>	<i>Obligations</i>	
02/15/83-12/31/85	FY85: \$51,875 TOTAL: \$130,241	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Frankel, R. M.	ARC/Hart, S. G.	62-Social Aspects
	ARC/Tanner, T. A.	

**NCC 2-362 Western Michigan University 3432**  
Application of modern control theory for aircraft control synthesis

<i>Period</i>	<i>Obligations</i>	
08/01/85-10/31/85	FY85: \$22,312 TOTAL: \$22,312	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Alag, G. S.	ARC/Kempel, R. W.	41-Aero Engr
	ARC/Gilyard, G. B.	

**MINNESOTA**

**NAG 5-349 Augsburg College 3433**  
Analysis of atomic thermospheric nitrogen density

<i>Period</i>	<i>Obligations</i>	
07/15/83-09/14/85	FY85: \$5,484 TOTAL: \$57,628	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Engelbretson, M. J.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

**NAG 1-217 Univ of Minnesota - Minneapolis-St Paul 3434**  
Eigenspace techniques for active flutter suppression

<i>Period</i>	<i>Obligations</i>	
10/01/81-12/31/85	FY85: \$21,616 TOTAL: \$114,108	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Garrard, W. L.	LARC/Adams, W. M., Jr.	41-Aero Engr
Liebst, B. S.		

**NAG 1-278 Univ of Minnesota - Minneapolis-St Paul 3435**  
Craze micromechanics in viscoelastic aerospace materials

<i>Period</i>	<i>Obligations</i>	
06/01/82-05/31/86	FY85: \$59,673 TOTAL: \$276,398	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hsiao, C. C.	LARC/Crews, J. H.	47-Materials Engr
	LARC/Newman, J. C., Jr.	

**NAG 2-31 Univ of Minnesota - Minneapolis-St Paul 3436**  
Condensation nuclei measurements in the stratosphere for the NASA space program

<i>Period</i>	<i>Obligations</i>	
02/01/80-12/31/85	FY85: \$52,000 TOTAL: \$334,007	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilson, J. C.	ARC/Oberbeck, V. R.	31-Atmos Sci
Liu, B. J.		

**NAG 2-63 Univ of Minnesota - Minneapolis-St Paul 3437**  
Drop dynamics and breakup

<i>Period</i>	<i>Obligations</i>	
08/01/80-09/30/84	FY85: TOTAL: \$116,075	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Scriven, L. E.	ARC/Brooks, W. F.	13-Physics

**NAG 2-284 Univ of Minnesota - Minneapolis-St Paul 3438**  
Use of the University of Minnesota's condensation nucleus counter in the stratosphere-troposphere exchange program (STEP)

<i>Period</i>	<i>Obligations</i>	
01/01/84-09/30/85	FY85: TOTAL: \$49,447	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilson, J. C.	ARC/Wilhelmi, A. J.	31-Atmos Sci
	ARC/Russell, P. B.	

**NAG 3-161 Univ of Minnesota - Minneapolis-St Paul 3439**  
Studies of acoustical properties of bulk porous flexible fibrous materials

<i>Period</i>	<i>Obligations</i>	
02/20/81-06/30/84	FY85: TOTAL: \$84,345	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lambert, R. F.	LERC/Rice, E. J.	13-Physics
	LERC/Baumeister, K. J.	

**NASA'S UNIVERSITY PROGRAM  
MINNESOTA (Continued)**

**NAG 3-286 Univ of Minnesota - Minneapolis-St Paul 3440**  
Boundary layer transition investigation on curved surfaces

Period	Obligations	
06/01/82-11/28/85	FY85: \$49,000	TOTAL: \$144,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Simon, T. W.	LERC/Gaugler, R. E.	46-Mech Engr
	LERC/Brigham, B. A.	

**NAG 3-579 Univ of Minnesota - Minneapolis-St Paul 3441**  
Computation of turbine blade heat transfer

Period	Obligations	
11/01/84-10/31/85	FY85: \$65,028	TOTAL: \$65,028
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Patankar, S. V.	LERC/Van Fossen, G.	46-Mech Engr

**NAG 3-596 Univ of Minnesota - Minneapolis-St Paul 3442**  
Efficient numerical techniques for complex fluid flows

Period	Obligations	
03/02/85-03/01/86	FY85: \$69,915	TOTAL: \$69,915
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Patankar, S. V.	LERC/Choo, Y. K.	13-Physics

**NAG 3-598 Univ of Minnesota - Minneapolis-St Paul 3443**  
Investigation of heat transfer and hydrodynamics in oscillating flows with application to Stirling engine components

Period	Obligations	
01/22/85-01/01/86	FY85: \$10,000	TOTAL: \$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Simon, T. W.	LERC/Dudenhofer, J.	13-Physics

**NAG 5-190 Univ of Minnesota - Minneapolis-St Paul 3444**  
Study of variable extinction of hot stars with circumstellar dust shells

Period	Obligations	
07/01/81-12/31/84	FY85:	TOTAL: \$19,118
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sitko, M. L.	GSFC/Kondo, Y.	11-Astronomy
Stein, W. A.		
Jones, T. W.		

**NAG 5-529 Univ of Minnesota - Minneapolis-St Paul 3445**  
Dynamics Explorer magnetometer experiment

Period	Obligations	
04/01/85-11/30/85	FY85: \$38,848	TOTAL: \$38,848
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cahill, L. J.	GSFC/Sugiura, M.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

**NAG 5-535 Univ of Minnesota - Minneapolis-St Paul 3446**  
Analysis of Helios data

Period	Obligations	
05/01/85-04/30/86	FY85: \$8,000	TOTAL: \$8,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kellogg, P. J.	GSFC/Bullock, G. D.	19-Phys Sci, NEC

**NAG 5-559 Univ of Minnesota - Minneapolis-St Paul 3447**  
Ultraviolet observations of the inner jet of Centaurus A

Period	Obligations	
06/15/85-06/14/86	FY85: \$10,831	TOTAL: \$10,831
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pennington, R. L.	GSFC/Kondo, Y.	11-Astronomy
Dufour, R. J.		

**NAG 6-11 Univ of Minnesota - Minneapolis-St Paul 3448**  
Investigation of auroral electrodynamics and argon release for controlled studies (ARCS)

Period	Obligations	
04/23/81-04/22/86	FY85: \$53,000	TOTAL: \$353,388
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cahill, L. J.	GSFC/Early, L. J.	13-Physics
Kintner, P. M.	GSFC/Pless, R. H.	

**NAG 8-500 Univ of Minnesota - Minneapolis-St Paul 3449**  
Program of analysis of data obtained by the HEAO 3 spacecraft

Period	Obligations	
10/01/84-09/30/85	FY85: \$100,000	TOTAL: \$100,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Waddington, C. J.	MSFC/Johnson, W. G.	11-Astronomy

**NAG 9-60 Univ of Minnesota - Minneapolis-St Paul 3450**  
Rare gas studies on lunar, meteoritic, and selected terrestrial materials

Period	Obligations	
02/01/83-01/31/86	FY85: \$149,000	TOTAL: \$432,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pepin, R. O.	JSC/Browne, I. D.	32-Geological Sci

**NAG 9-66 Univ of Minnesota - Minneapolis-St Paul 3451**  
Search for accumulation of juvenile mantle gases in the Earth's crust

Period	Obligations	
02/01/84-02/01/86	FY85: \$32,000	TOTAL: \$71,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Alexander, E. C., Jr.	JSC/Phinney, W. C.	32-Geological Sci

**NAG 9-110 Univ of Minnesota - Minneapolis-St Paul 3452**  
Anomalous isotopic abundances in extraterrestrial material

Period	Obligations	
04/23/85-04/23/86	FY85: \$37,000	TOTAL: \$37,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nier, A. O.	JSC/Browne, I. D.	47-Materials Engr

**NAGW 485 Univ of Minnesota - Minneapolis-St Paul 3453**  
Suttil CO2 well investigation

Period	Obligations	
08/01/83-07/31/84	FY85:	TOTAL: \$4,975
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Alexander, E. C.	HQ-EL/Williams, R. J.	32-Geological Sci
	HQ-EL/French, B. M.	

**NASA'S UNIVERSITY PROGRAM**  
**MINNESOTA (Continued)**

**NAGW 505 Univ of Minnesota - Minneapolis-St Paul 3454**  
 Development of a pyrolysis experiment

<i>Period</i>	<i>Obligations</i>	
10/01/83-01/31/86	FY85: \$51,342	TOTAL: \$125,477
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mauersberger, K.	HQ-EL/Quaide, W. L.	11-Astronomy
Nier, A. O.	HQ-EL/Vescelus, F.	

**NAS 5-28740 Univ of Minnesota - Minneapolis-St Paul 3461**  
 An ecological study of peat landforms in Canada and Alaska

<i>Period</i>	<i>Obligations</i>	
06/13/85-10/14/87	FY85: \$174,170	TOTAL: \$174,170
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Glaser, P. H.	GSFC/Oseroff, H.	39-Env Sci, NEC
Janssens, J. A.		

**NAGW 800 Univ of Minnesota - Minneapolis-St Paul 3455**  
 Kinetics and mechanisms of stratospheric chlorine release from chlorofluoromethyl species

<i>Period</i>	<i>Obligations</i>	
09/01/85-08/31/86	FY85: \$73,669	TOTAL: \$73,669
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carr, R. W.	HQ-EE/Smith, M. H.	31-Atmos Sci
	HQ-EE/Demore, W. B.	

**NAS 8-27977 Univ of Minnesota - Minneapolis-St Paul 3462**  
 Design, development, and operation of Cerenkov portion of the ACR-7 heavy nuclei experiment under the HEAO program

<i>Period</i>	<i>Obligations</i>	
06/16/72-09/30/85	FY85:	TOTAL: \$1,899,428
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Waddington, C. J.	MSFC/Stone, J. F.	11-Astronomy

**NAS 2-12090 Univ of Minnesota - Minneapolis-St Paul 3456**  
 Condensation nucleus counter experiment

<i>Period</i>	<i>Obligations</i>	
01/14/85-09/30/87	FY85: \$69,400	TOTAL: \$69,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilson, J. C.	ARC/Wilhelmi, A.	31-Atmos Sci

**NGL 24-005-009 Univ of Minnesota - Minneapolis-St Paul 3463**  
 Development and application of mass spectrometers to studies of Earth's upper atmosphere and planetary atmospheres

<i>Period</i>	<i>Obligations</i>	
08/01/62-09/30/85	FY85:	TOTAL: \$2,093,682
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nier, A. O.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAS 5-11310 Univ of Minnesota - Minneapolis-St Paul 3457**  
 A.C. Electric fields experiment Helios

<i>Period</i>	<i>Obligations</i>	
06/29/70-06/30/85	FY85:	TOTAL: \$1,595,219
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kellogg, P. J.	GSFC/Bullock, G. D.	11-Astronomy

**NGR 24-005-050 Univ of Minnesota - Minneapolis-St Paul 3464**  
 Measurement of the gamma ray flux of various celestial point sources from high altitude balloons

<i>Period</i>	<i>Obligations</i>	
04/21/65-11/30/85	FY85: \$200,000	TOTAL: \$1,832,671
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Waddington, C. J.	HQ-EZ/Ormes, J. F.	11-Astronomy
	HQ-EZ/Kaluzienski, L. J.	

**NAS 5-25389 Univ of Minnesota - Minneapolis-St Paul 3458**  
 Dynamic Explorer A and B magnetometer experiment support

<i>Period</i>	<i>Obligations</i>	
11/08/78-03/31/85	FY85:	TOTAL: \$218,674
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cahill, L. J., Jr.	GSFC/Sugiura, M.	11-Astronomy

**NGT 24-001-801 Univ of Minnesota - Minneapolis-St Paul 3465**  
 NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/85-05/31/86	FY85: \$17,170	TOTAL: \$17,170
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pepin, R. O.	HQ-LE/Owens, F. C.	13-Physics

**NAS 5-25753 Univ of Minnesota - Minneapolis-St Paul 3459**  
 Selected hardware for unified radio and plasma wave experiment for International Solar Polar Mission

<i>Period</i>	<i>Obligations</i>	
07/03/79-05/31/86	FY85: \$165,000	TOTAL: \$1,569,811
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kellogg, P. J.	GSFC/Klein, B.	11-Astronomy

**NGT 25-001-800 Univ of Minnesota - Minneapolis-St Paul 3466**  
 NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
09/15/85-09/14/86	FY85: \$18,000	TOTAL: \$18,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Alexander, E. C., Jr.	HQ-LE/Owens, F. C.	32-Geological Sci

**NAS 5-28574 Univ of Minnesota - Minneapolis-St Paul 3460**  
 Design and develop a portion of radio and plasma wave instrument selected to fly on the open wind spacecraft

<i>Period</i>	<i>Obligations</i>	
09/20/84-09/30/86	FY85: \$127,998	TOTAL: \$189,963
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kellogg, P. J.	GSFC/Kaiser, M. L.	45-Elec Engr
	GSFC/Stone, R. G.	

**NSG 1431 Univ of Minnesota - Minneapolis-St Paul 3467**  
 Neutral constituent measurements in the stratosphere

<i>Period</i>	<i>Obligations</i>	
07/01/77-03/31/86	FY85: \$183,817	TOTAL: \$1,099,831
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mauersberger, K.	LARC/Beswick, A. G.	31-Atmos Sci
Nier, A. O.		

**NASA'S UNIVERSITY PROGRAM  
MINNESOTA (Continued)**

**NSG 2014 Univ of Minnesota - Minneapolis-St Paul 3468**  
Exploratory astrophysics and infrared astronomy  
*Period Obligations*  
02/01/74-01/31/86 FY85: \$44,102 TOTAL: \$602,391  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ney, E. P. HQ-EZ/Stencel, R. E. 11-Astronomy  
HQ-EZ/Brunk, W. E.

**NSG 5088 Univ of Minnesota - Minneapolis-St Paul 3469**  
Magnetospheric physics phenomena using sounding rockets  
*Period Obligations*  
11/01/75-12/31/85 FY85: \$142,092 TOTAL: \$1,772,194  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Winckler, J. R. GSFC/Early, L. J. 13-Physics  
GSFC/Pless, R. H.

**NSG 5373 Univ of Minnesota - Minneapolis-St Paul 3470**  
Experiments employing a rocket-borne electron accelerator  
*Period Obligations*  
06/15/79-05/31/86 FY85: \$86,830 TOTAL: \$402,080  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kellogg, P. J. GSFC/Early, L. J. 13-Physics  
Bernstein, W. GSFC/Pless, R. H.

**NSG 5397 Univ of Minnesota - Minneapolis-St Paul 3471**  
Observations of emission lines in the Crab nebula  
*Period Obligations*  
08/01/79-08/31/85 FY85: TOTAL: \$44,719  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Davidson, K. GSFC/Kondo, Y. 11-Astronomy  
Walborn, N. R.  
Gull, T. R.

**MISSISSIPPI**

**NAGW 502 Jackson State University 3472**  
Electronic spectroscopy of molecular ions  
*Period Obligations*  
09/01/83-09/30/85 FY85: TOTAL: \$255,010  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hale, B. HQ-EZ/Stencel, R. E. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NAGW 643 Millsaps College 3473**  
Anatomical and ultrastructural analysis of the rheceptive mediators of graviperception in a lower crustacean daphnia magna  
*Period Obligations*  
08/01/84-07/31/85 FY85: TOTAL: \$5,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Meyers, D. G. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAG 1-226 Mississippi State University 3474**  
Transonic viscous-inviscid interaction using Euler and inverse boundary-layer equations  
*Period Obligations*  
11/01/81-10/31/85 FY85: \$69,474 TOTAL: \$177,334  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Whitfield, D. L. LARC/Thames, F. C. 41-Aero Engr  
LARC/Dwoyer, D. L.

**NAG 1-362 Mississippi State University 3475**  
Numerical solution of high Reynolds number transonic flow past wing/body configurations  
*Period Obligations*  
05/16/83-05/15/86 FY85: \$44,740 TOTAL: \$119,713  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Koenig, K. LARC/Waggoner, E. G. 41-Aero Engr

**NAG 8-545 Mississippi State University 3476**  
Standardization of the carbon-carbon and carbon-phenolic materials and processes  
*Period Obligations*  
08/27/85-08/26/86 FY85: \$99,969 TOTAL: \$99,969  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hall, W. B. MSFC/Nichols, R. L. 47-Materials Engr  
MSFC/Clinton, R.

**NAS 8-33570 Mississippi State University 3477**  
Analysis of space telescope collection systems  
*Period Obligations*  
07/26/79-05/31/84 FY85: TOTAL: \$119,746  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ingels, F. M. MSFC/Parker, G. A. 11-Astronomy  
MSFC/Gray, R. A.

**NAS 8-34906 Mississippi State University 3478**  
A study of high density bit transition requirements versus the elluts on error correcting code  
*Period Obligations*  
08/26/82-12/31/85 FY85: TOTAL: \$66,702  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ingels, F. M. MSFC/Jobe, G. S. 22-Computer Science  
MSFC/Settle, G.

**NAS 8-36044 Mississippi State University 3479**  
Analysis of space telescope data collection system  
*Period Obligations*  
08/03/84-12/31/85 FY85: TOTAL: \$24,998  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ingels, F. M. MSFC/Seiler, B. K. 45-Elec Engr  
MSFC/Parker, G. A.

**NAS 8-36486 Mississippi State University 3480**  
Advanced 3-D viscous SSME turbine rotor stator CFD algorithms  
*Period Obligations*  
09/06/85-09/06/86 FY85: \$34,967 TOTAL: \$34,967  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Whitfield, D. L. MSFC/Wilson, H. B. 31-Atmos Sci  
MSFC/Jordan, J. D.

**NAS 9-17319 Mississippi State University 3481**  
Develop a microcomputer application to bioprocessing  
*Period Obligations*  
02/01/85-01/31/86 FY85: \$29,747 TOTAL: \$29,747  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Rundel, R. JSC/Morrison, D. 59-Life Sci, NEC

**NASA'S UNIVERSITY PROGRAM**  
**MISSISSIPPI (Continued)**

**NCA 2-52 Mississippi State University 3482**  
 A study of probe induced separation on blunt bodies in transonic flow  

Period	Obligations	
07/01/85-06/30/86	FY85: \$9,975	TOTAL: \$9,975
Prin. Invest.	NASA Tech. Officer	CASE Category
Koenig, K.	ARC/Chapman, G. T.	41-Aero Engr

**NAG 1-496 University of Mississippi - University 3489**  
 Radiative coupled nonequilibrium flow fields associated with aerostated orbital transfer  

Period	Obligations	
07/01/84-12/31/85	FY85:	TOTAL: \$18,461
Prin. Invest.	NASA Tech. Officer	CASE Category
Horton, T. E.	LARC/Sutton, K.	46-Mech Engr
	LARC/Jones, J. J.	

**NGL 25-001-054 Mississippi State University 3483**  
 Application of remotely sensed data to state and regional problems  

Period	Obligations	
11/01/73-10/30/84	FY85:	TOTAL: \$1,050,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Miller, W. F.	HQ-ET/Vitale, J. A.	39-Env Sci, NEC

**NAS 8-35183 University of Mississippi - University 3490**  
 An airplane sensor to measure the charge and shape of cloud precipitation particles  

Period	Obligations	
02/22/83-06/30/86	FY85:	TOTAL: \$37,850
Prin. Invest.	NASA Tech. Officer	CASE Category
Marshall, T. C.	MSFC/Christian, H. J.	31-Atmos Sci
	MSFC/Smith, G. T.	

**NGT 25-001-801 Mississippi State University 3484**  
 NASA graduate student researchers program  

Period	Obligations	
08/01/82-11/30/84	FY85:	TOTAL: \$28,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Mitchell, J. R.	HQ-LB/Carter, C. H.	45-Elec Engr

**NAG 3-587 University of Southern Mississippi 3491**  
 Thin film characteristics of a series of semiconducting polymers  

Period	Obligations	
11/10/84-11/09/85	FY85: \$9,990	TOTAL: \$9,990
Prin. Invest.	NASA Tech. Officer	CASE Category
Howell, J. E.	LERC/Flood, D. J.	12-Chemistry

**NGT 25-001-802 Mississippi State University 3485**  
 NASA graduate student researchers program  

Period	Obligations	
05/21/84-08/31/85	FY85:	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ingels, F.	HQ-LB/Owens, F. C.	46-Mech Engr

**NAG 5-393 University of Southern Mississippi 3492**  
 Computer modeling of high-energy radiation detector electronics  

Period	Obligations	
02/01/84-09/30/85	FY85:	TOTAL: \$5,677
Prin. Invest.	NASA Tech. Officer	CASE Category
Bogart, T. F.	GSFC/Joyce, R. M.	45-Elec Engr

**NGT 25-006-800 Mississippi State University 3486**  
 NASA graduate student researchers program  

Period	Obligations	
06/01/82-08/31/84	FY85:	TOTAL: \$28,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ingels, F. M.	HQ-LB/Owens, F. C.	45-Elec Engr

**NAS13-265 University of Southern Mississippi 3493**  
 Survey of bacteria associated with the root systems of aquatic and marsh plants used in wastewater treatment systems  

Period	Obligations	
01/30/85-01/30/86	FY85: \$19,927	TOTAL: \$19,927
Prin. Invest.	NASA Tech. Officer	CASE Category
Taylor, R. D.	NSTL/Wolverton, B. C.	54-Env Biology

**NSG 1577 Mississippi State University 3487**  
 Transformation of two and three dimensional regions by elliptic systems  

Period	Obligations	
11/15/78-11/14/85	FY85: \$34,658	TOTAL: \$192,707
Prin. Invest.	NASA Tech. Officer	CASE Category
Thompson, J. F.	LARC/Smith, R. E., Jr.	21-Mathematics
Mastin, C. W.	LARC/Shoosmith, J. N.	

**MISSOURI**

**NAS 8-35330 Saint Louis University 3494**  
 Statistical analysis and use of vas radiance data  

Period	Obligations	
09/06/83-09/05/86	FY85:	TOTAL: \$104,400
Prin. Invest.	NASA Tech. Officer	CASE Category
Fuelberg, H. E.	MSFC/Wilson, G. S.	31-Atmos Sci
	MSFC/Arnold, J. E.	

**NSG 1539 Mississippi University For Women 3488**  
 Monomers for high performance polyester, polyimide, and epoxide resins  

Period	Obligations	
06/15/78-07/31/85	FY85:	TOTAL: \$199,026
Prin. Invest.	NASA Tech. Officer	CASE Category
Pratt, J. R.	LARC/St Clair, T. L.	12-Chemistry
	LARC/Bell, V. L.	

**NGT 26-006-800 Saint Louis University 3495**  
 NASA graduate student researchers program  

Period	Obligations	
04/01/82-05/31/85	FY85:	TOTAL: \$40,475
Prin. Invest.	NASA Tech. Officer	CASE Category
Fuelberg, H. L.	HQ-LB/Owens, F. C.	31-Atmos Sci



**NASA'S UNIVERSITY PROGRAM**  
**MISSOURI (Continued)**

**NAG 5-381 University of Missouri - Columbia 3496**  
 Study of quasi geostrophic dynamics for modeling frontal cyclones

<i>Period</i>	<i>Obligations</i>	
01/01/84-09/30/86	FY85: \$30,215	TOTAL: \$68,172
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mudrick, S. E.	GSFC/Baker, W.	41-Aero Engr

**NAGW 46 University of Missouri - Columbia 3497**  
 Development of remote sensing experience at the University of Missouri-Columbia

<i>Period</i>	<i>Obligations</i>	
04/01/80-03/31/86	FY85: \$34,000	TOTAL: \$619,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McFarland, W. D.	HQ-EL/Tuyahov, A. J.	39-Env Sci, NEC

**NAGW 170 University of Missouri - Columbia 3498**  
 Galilean satellite mapping programs

<i>Period</i>	<i>Obligations</i>	
04/01/81-01/31/84	FY85: \$76,953	TOTAL: \$89,698
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Whitford-stark H, J. L.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAS 9-15477 University of Missouri - Columbia 3499**  
 Development and verification of simulation models for analyzing orbiter digital communications and data links

<i>Period</i>	<i>Obligations</i>	
01/01/78-12/01/84	FY85:	TOTAL: \$79,564
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tranter, W. H.	JSC/Porter, J.	29-Math/Cmputer, NEC

**NAS13-251 University of Missouri - Columbia 3500**  
 Lithology, petrology and rock chemistry for the pyramid mountains, New Mexico

<i>Period</i>	<i>Obligations</i>	
06/07/84-11/15/84	FY85:	TOTAL: \$5,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Grant, S. K.	NSTL/Rickman, D. L.	32-Geological Sci

**NCC 2-199 University of Missouri - Columbia 3501**  
 Aerodynamic holography in transonic flow

<i>Period</i>	<i>Obligations</i>	
07/01/82-06/30/86	FY85:	TOTAL: \$67,350
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Miles, J. B.	ARC/Brown, J. L.	41-Aero Engr

**NGT 26-007-800 University of Missouri - Columbia 3502**  
 NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
07/01/85-06/30/86	FY85: \$18,000	TOTAL: \$18,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Marrero, T. R.	HQ-LE/Owens, F. C.	43-Chem Engr

**NAG 1-198 University of Missouri - Rolla 3503**  
 Further development of the finite element method in acoustic propagation and radiation

<i>Period</i>	<i>Obligations</i>	
08/15/81-11/30/84	FY85:	TOTAL: \$90,449
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Eversman, W.	LARC/Silcox, R. J.	41-Aero Engr
Astley, R. J.	LARC/Lester, H. C.	

**NAG 1-240 University of Missouri - Rolla 3504**  
 Improved finite element model for noise transmission through composite panels

<i>Period</i>	<i>Obligations</i>	
01/01/82-08/31/85	FY85:	TOTAL: \$117,903
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Koval, L. R.	LARC/Powell, C. A.	41-Aero Engr
	LARC/Mixson, J. S.	

**NAG 1-380 University of Missouri - Rolla 3505**  
 Transport properties of air at high temperatures

<i>Period</i>	<i>Obligations</i>	
07/01/83-12/31/85	FY85:	TOTAL: \$41,240
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Biolsi, L., Jr.	LARC/Sutton, K.	12-Chemistry
	LARC/Jones, J. J.	

**NAG 1-394 University of Missouri - Rolla 3506**  
 Fundamental studies of structure borne noise for advanced turboprop applications

<i>Period</i>	<i>Obligations</i>	
09/01/83-08/31/85	FY85:	TOTAL: \$87,518
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Eversman, W.	LARC/Mayes, W. H.	41-Aero Engr
Koval, L. R.	LARC/Metcalf, V. L.	

**NAG 1-425 University of Missouri - Rolla 3507**  
 Fracture and fatigue mechanism of adhesively bonded joints

<i>Period</i>	<i>Obligations</i>	
11/08/83-12/31/85	FY85: \$38,090	TOTAL: \$78,976
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mall, S.	LARC/Johnson, W. S.	46-Mech Engr
	LARC/Everett, R. A., Jr.	

**NAG 3-178 University of Missouri - Rolla 3508**  
 Study of sound transmission in high speed flows

<i>Period</i>	<i>Obligations</i>	
08/31/81-12/27/85	FY85: \$47,999	TOTAL: \$160,631
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Eversman, W.	LERC/Baumeister, K. J.	41-Aero Engr
Wicks, T.	LERC/Rice, E. J.	

**NAS 8-34603 University of Missouri - Rolla 3509**  
 An experimental study of ice nucleation and crystal growth in a cloud simulation facility

<i>Period</i>	<i>Obligations</i>	
12/18/81-12/18/84	FY85:	TOTAL: \$155,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hagen, D. E.	MSFC/Fogle, V.	13-Physics
	MSFC/Williams, J. R.	

**NASA'S UNIVERSITY PROGRAM**  
**MISSOURI (Continued)**

**NAS 8-34758**      **University of Missouri - Rolla**      **3510**  
 Containerless processing of glass forming melts in space  
*Period*      *Obligations*  
 03/02/82-06/30/87      FY85: \$113,000      TOTAL: \$398,614  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Day, D. E.      MSFC/Fallon, R. A.      13-Physics  
                                  MSFC/Williams, J. R.

**NAS 8-35325**      **University of Missouri - Rolla**      **3511**  
 A study of fatigue damage on detected superalloys by position annihilation spectrometry  
*Period*      *Obligations*  
 05/09/83-05/09/85      FY85:      TOTAL: \$62,074  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Leighly, H. P.      MSFC/Munafo, P. M.      47-Materials Engr  
                                  MSFC/Wright, L.

**NCA 2-450201**      **University of Missouri - Rolla**      **3512**  
 Viscous effect on wings during steady transonic flight  
*Period*      *Obligations*  
 04/01/82-09/30/84      FY85:      TOTAL: \$20,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Weintraub, D. J.      ARC/Holst, T. L.      41-Aero Engr

**NAG 5-243**      **University of Missouri - Saint Louis**      **3513**  
 Ultraviolet observations of low excitation herbig-haro objects  
*Period*      *Obligations*  
 07/01/82-09/30/85      FY85:      TOTAL: \$12,408  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Schwartz, R. D.      GSFC/Kondo, Y.      11-Astronomy

**NAG 5-461**      **University of Missouri - Saint Louis**      **3514**  
 Low-excitation herbig-haro objects and interstellar extention  
*Period*      *Obligations*  
 08/01/84-07/31/85      FY85: \$5,700      TOTAL: \$9,700  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Schwartz, R. D.      GSFC/Kondo, Y.      11-Astronomy

**NAGW 586**      **University of Missouri - Saint Louis**      **3515**  
 Condensate phenomenon in the polar regions of Mars  
*Period*      *Obligations*  
 03/15/84-03/14/85      FY85:      TOTAL: \$18,185  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 James, P. B.      HQ-EL/Brinton, H. C.      32-Geological Sci  
                                  HQ-EL/Brunk, W. E.

**NAGW 742**      **University of Missouri - Saint Louis**      **3516**  
 Condensate phenomena in the polar regions of Mars  
*Period*      *Obligations*  
 04/25/85-04/24/86      FY85: \$17,154      TOTAL: \$17,154  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 James, P. B.      HQ-EL/Brinton, H. C.      32-Geological Sci  
                                  HQ-EL/Brunk, W.

**NSG 7563**      **University of Missouri - Saint Louis**      **3517**  
 Condensate phenomena in the polar regions of Mars  
*Period*      *Obligations*  
 03/01/79-08/31/84      FY85:      TOTAL: \$87,810  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 James, P. B.      HQ-EL/Quaide, W. L.      32-Geological Sci  
                                  HQ-EL/Boyce, J. M.

**NAG 1-250**      **Washington University**      **3518**  
 Methodology of design of helicopter rotor blades for optimum dynamic characteristics  
*Period*      *Obligations*  
 01/18/82-06/17/85      FY85:      TOTAL: \$215,028  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Peters, D. A.      LARC/Mantay, W. R.      41-Aero Engr

**NAG 1-295**      **Washington University**      **3519**  
 Compression failure mechanisms of composite structures  
*Period*      *Obligations*  
 08/01/82-07/31/85      FY85:      TOTAL: \$139,969  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Hahn, H. T.      LARC/Williams, J. G.      41-Aero Engr  
                                  LARC/Starnes, J. H., Jr.

**NAG 3-578**      **Washington University**      **3520**  
 Investigation of cryogenic propellant management in a low-gravity environment  
*Period*      *Obligations*  
 11/01/84-01/15/86      FY85: \$120,050      TOTAL: \$120,050  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Hochstein, J. I.      LERC/Aydelott, J. C.      46-Mech Engr  
                                  LERC/Lacovic, R. F.

**NAG 8-448**      **Washington University**      **3521**  
 A study of the cosmic ray source composition  
*Period*      *Obligations*  
 03/28/83-09/27/84      FY85:      TOTAL: \$7,823  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Margolis, S. H.      MSFC/Stone, J. F.      11-Astronomy

**NAG 8-498**      **Washington University**      **3522**  
 Analysis of data from the HEAO heavy nuclei experiment (C3)  
*Period*      *Obligations*  
 10/01/84-09/30/85      FY85: \$157,000      TOTAL: \$157,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Israel, M. H.      MSFC/Johnson, W. G.      11-Astronomy

**NAG 9-7**      **Washington University**      **3523**  
 Lunar and planetary surface dynamics and early history  
*Period*      *Obligations*  
 02/01/80-01/31/86      FY85: \$154,000      TOTAL: \$733,600  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Hohenberg, C. M.      JSC/Browne, I. D.      31-Atmos Sci

**NAG 9-55**      **Washington University**      **3524**  
 Solid state and mass spectrometric measurements of extraterrestrial  
*Period*      *Obligations*  
 02/01/83-01/31/86      FY85: \$472,000      TOTAL: \$1,344,100  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Walker, R. M.      JSC/Dietrich, J. W.      32-Geological Sci

**NASA'S UNIVERSITY PROGRAM**  
**MISSOURI (Continued)**

**NAG 9-56 Washington University 3525**  
Analytical, experimental, and modeling studies of lunar and terrestrial igneous rocks  
*Period Obligations*  
02/01/83-02/01/86 FY85: \$220,000 TOTAL: \$548,327  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Haskin, L. A. JSC/Browne, I. D. 32-Geological Sci  
Korotev, R. L.  
Lindstrom, D. J.

**NAG 9-98 Washington University 3526**  
Geochemistry-petrology of Archean rocks  
*Period Obligations*  
03/01/85-03/01/86 FY85: \$21,000 TOTAL: \$21,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Dymek, R. F. JSC/Phinney, W. C. 32-Geological Sci

**NAG 9-101 Washington University 3527**  
Electrolytic smelting of simulated lunar materials lunar and terrestrial igneous rocks: Lunar oxygen production  
*Period Obligations*  
02/01/85-01/31/86 FY85: \$9,999 TOTAL: \$9,999  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Haskin, L. A. JSC/McKay, D. S. 19-Phys Sci, NEC

**NAGW 122 Washington University 3528**  
Proposal for the innovative research program  
*Period Obligations*  
11/15/80-11/14/85 FY85: \$140,000 TOTAL: \$690,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Walker, R. M. HQ-E/Rosenthal, J. D. 19-Phys Sci, NEC  
Israel, M. H. HQ-EP/Konkel, R. M.

**NAGW 179 Washington University 3529**  
Analytical, experimental, and modeling studies of lunar and terrestrial igneous rocks  
*Period Obligations*  
04/01/81-04/30/85 FY85: \$40,000 TOTAL: \$438,176  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Haskin, L. A. HQ-EL/Quaide, W. L. 32-Geological Sci  
HQ-EL/French, B. M.

**NAGW 301 Washington University 3530**  
Ground base models of hypokinesia and skeletal physiology  
*Period Obligations*  
03/01/82-02/29/84 FY85: TOTAL: \$84,846  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Simmons, D. J. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAGW 418 Washington University 3531**  
High efficiency turnable filters for the vacuum ultraviolet  
*Period Obligations*  
03/15/83-02/14/86 FY85: \$49,768 TOTAL: \$139,768  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Smith, W. H. HQ-E/Rosendhal, J. D. 32-Geological Sci  
HQ-EP/Konkel, R. M.

**NAGW 420 Washington University 3532**  
How the pea stem senses gravity, friction and flexure  
*Period Obligations*  
02/01/83-01/31/85 FY85: TOTAL: \$40,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Pickard, B. G. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAGW 432 Washington University 3533**  
Structure and evolution of outer planet satellite  
*Period Obligations*  
03/01/83-02/28/86 FY85: \$47,626 TOTAL: \$93,157  
*Prin. Invest. NASA Tech. Officer CASE Category*  
McKinnon, W. B. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NAGW 592 Washington University 3534**  
Annihilation radiation in cosmic gamma ray bursts  
*Period Obligations*  
04/01/84-02/28/86 FY85: \$20,832 TOTAL: \$40,832  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Katz, J. HQ-EZ/Kaluzienski, L. J.  
HQ-EZ/Cline, T. L. 39-Env Sci, NEC

**NAGW 608 Washington University 3535**  
Fundamental investigations related to the development of capture cell instruments for comet- atom return missions and shuttle based studies of interplanetary dust  
*Period Obligations*  
04/01/84-03/31/86 FY85: \$90,000 TOTAL: \$142,812  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Walker, R. M. HQ-EL/Quaide, W. L. 32-Geological Sci

**NAGW 660 Washington University 3536**  
Continuing analysis of cloud form and related Viking and Mariner 9 data  
*Period Obligations*  
09/01/84-08/31/86 FY85: \$124,805 TOTAL: \$124,805  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kahn, R. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Quaide, W. L.

**NAG10-22 Washington University 3537**  
Study entitled role of auxin in normal and aberrant gravitropism of tomato seedlings  
*Period Obligations*  
06/18/85-06/18/86 FY85: \$26,685 TOTAL: \$26,685  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Packard, B. KSC/Knott, W. M. 39-Env Sci, NEC

**NAS 8-27976 Washington University 3538**  
Design, development and operation of a heavy nuclei experiment under the HEAO program  
*Period Obligations*  
06/16/72-12/31/84 FY85: TOTAL: \$1,369,291  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Rekate, H. L. MSFC/Johnson, W. G. 11-Astronomy  
Ko, W. H.

# **NASA'S UNIVERSITY PROGRAM** **MISSOURI (Continued)**

**NASW 4017** **Washington University** **3539**  
Mapping surface materials via remote sensing data in Missouri and Egypt

Period	Obligations
03/18/85-03/17/88	FY85: \$130,624 TOTAL: \$130,624
Prin. Invest.	NASA Tech. Officer CASE Category
Arvidson, R. E.	HQ-EE/Evans, D. 19-Phys Sci, NEC
Guinness, E.	
Sultan, M.	

**NGL 26-008-065** **Washington University** **3540**  
Lunar sample analysis

Period	Obligations
02/01/71-02/01/85	FY85: TOTAL: \$3,577,642
Prin. Invest.	NASA Tech. Officer CASE Category
Walker, R. M.	JSC/Dietrich, J. W. 13-Physics

**NGR 26-008-001** **Washington University** **3541**  
Determination of characteristics of high altitude primary cosmic radiation at low latitudes

Period	Obligations
09/01/61-10/31/85	FY85: \$229,875 TOTAL: \$2,825,517
Prin. Invest.	NASA Tech. Officer CASE Category
Israel, M. H.	HQ-EZ/Ormes, J. F. 11-Astronomy
Klarmann, J.	HQ-EZ/Kaluzienski, L. J.

**NGT 26-010-800** **Washington University** **3542**  
NASA graduate student researchers program

Period	Obligations
09/15/84-09/14/86	FY85: \$12,525 TOTAL: \$12,525
Prin. Invest.	NASA Tech. Officer CASE Category
Miller, J. G.	HQ-LB/Owens, F. C. 13-Physics

**NGT 26-010-801** **Washington University** **3543**  
NASA graduate student researchers program

Period	Obligations
06/06/85-08/31/86	FY85: \$18,000 TOTAL: \$18,000
Prin. Invest.	NASA Tech. Officer CASE Category
Hahn, H. T.	HQ-LE/Owens, F. C. 46-Mech Engr

**NSG 1601** **Washington University** **3544**  
Quantitative non-destructive evaluation of composite materials based on ultrasonic wave propagation

Period	Obligations
03/15/79-03/14/86	FY85: \$105,758 TOTAL: \$569,200
Prin. Invest.	NASA Tech. Officer CASE Category
Miller, J. G.	LARC/Heyman, J. S. 13-Physics
	LARC/Winfrey, W. P.

**NSG 7087** **Washington University** **3545**  
Computerized analysis of Martian crater and Aeolian feature data

Period	Obligations
08/01/74-12/31/85	FY85: \$127,532 TOTAL: \$936,388
Prin. Invest.	NASA Tech. Officer CASE Category
Arvidson, R. E.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

**NSG 7334** **Washington University** **3546**  
Planetary observations using a new Fabry-Perot interferometric method

Period	Obligations
04/01/77-03/31/86	FY85: \$95,000 TOTAL: \$774,643
Prin. Invest.	NASA Tech. Officer CASE Category
Smith, W. H.	HQ-EL/Brinton, H. C. 11-Astronomy
	HQ-EL/Bergstrahl, J. T.

**NSG 7545** **Washington University** **3547**  
Multispectral, topographic, and photogeologic studies of Aeolian phenomena on Mars

Period	Obligations
03/01/79-12/31/85	FY85: \$35,462 TOTAL: \$344,846
Prin. Invest.	NASA Tech. Officer CASE Category
Arvidson, R. E.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

## **MONTANA**

**NAG 9-68** **Montana State University** **3548**  
Study-an Archean suture zone tobacco roo

Period	Obligations
02/01/84-02/01/86	FY85: \$16,000 TOTAL: \$31,000
Prin. Invest.	NASA Tech. Officer CASE Category
Mogk, D. W.	JSC/Phinney, W. C. 32-Geological Sci

**NAS 9-17346** **Montana State University** **3549**  
Adaptation to iodine resistance in waterborne bacteria

Period	Obligations
04/01/85-05/31/87	FY85: \$99,950 TOTAL: \$99,950
Prin. Invest.	NASA Tech. Officer CASE Category
McFeters, G. A.	JSC/Sauer, R. L. 51-Biological Sci

**NCA 2-69** **Montana State University** **3550**  
Fast and general purpose algorithms for data compression (joint research interchange)

Period	Obligations
09/23/85-06/20/86	FY85: \$13,524 TOTAL: \$13,524
Prin. Invest.	NASA Tech. Officer CASE Category
Weyland, N. J.	ARC/Hofman, L. B. 22-Computer Science

**NCA 2-470401** **Montana State University** **3551**  
File compression for solution sets to CFD problems

Period	Obligations
09/17/84-06/07/85	FY85: \$14,943 TOTAL: \$14,943
Prin. Invest.	NASA Tech. Officer CASE Category
Weyland, N. J.	ARC/Hofman, L. B. 22-Computer Science

**NCA 2-26** **University of Montana** **3552**  
Leaf area index and primary production of coniferous forests estimated with LANDSAT TM and computer simulation

Period	Obligations
04/01/85-03/31/87	FY85: \$39,820 TOTAL: \$39,820
Prin. Invest.	NASA Tech. Officer CASE Category
Running, S.	ARC/Peterson, D. L. 39-Env Sci, NEC

# **NASA'S UNIVERSITY PROGRAM** **MONTANA (Continued)**

**NCA 2-27 University of Montana 3553**  
Documentation and analysis of a canopy driven forest ecosystem model (joint research interchange)

Period	Obligations	
05/01/85-04/30/87	FY85: \$30,098	TOTAL: \$30,098
Prin. Invest.	NASA Tech. Officer	CASE Category
Running, S. W.	ARC/Peterson, D. L.	39-Env Sci, NEC
	ARC/Matson, P. A.	

**NCA 2-475301 University of Montana 3554**  
Leaf area index of coniferous forests measured by LANDSAT TM

Period	Obligations	
04/01/83-03/31/85	FY85: \$15,824	TOTAL: \$69,664
Prin. Invest.	NASA Tech. Officer	CASE Category
Running, S.	ARC/Peterson, D. L.	39-Env Sci, NEC
Gerlach, F.		

**NCA 2-475401 University of Montana 3555**  
Model simulation for productivity with water and nutrient controls

Period	Obligations	
05/01/84-04/30/85	FY85:	TOTAL: \$20,436
Prin. Invest.	NASA Tech. Officer	CASE Category
Running, S.	ARC/Peterson, D. L.	55-Agriculture Sci
	ARC/Matson, P. A.	

**NGT 27-003-800 University of Montana 3556**  
NASA graduate student researchers program

Period	Obligations	
06/01/85-05/31/86	FY85: \$17,280	TOTAL: \$17,280
Prin. Invest.	NASA Tech. Officer	CASE Category
Running, S. W.	HQ-LE/Owens, F. C.	54-Env Biology

## **NEBRASKA**

**NAG 3-95 University of Nebraska - Lincoln 3557**  
Intercalated carbon fiber conductor for aerospace use

Period	Obligations	
09/01/80-01/28/86	FY85: \$44,994	TOTAL: \$184,124
Prin. Invest.	NASA Tech. Officer	CASE Category
Woollam, J. A.	LERC/Jaworske, D. A.	45-Elec Engr

**NAG 3-154 University of Nebraska - Lincoln 3558**  
Surface passivation of III IV compound semiconductors for microwave applications

Period	Obligations	
03/10/81-01/05/86	FY85:	TOTAL: \$350,889
Prin. Invest.	NASA Tech. Officer	CASE Category
Woollam, J. A.	LERC/Alterovitz, S. A.	13-Physics

**NAG 3-634 University of Nebraska - Lincoln 3559**  
Comparison of laser imaging and sizing system and a phase/doppler sizing system for analyzing sprays from a NASA nozzle

Period	Obligations	
04/20/85-10/20/85	FY85: \$20,000	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Alexander, D. R.	LERC/Tacina, R. R.	41-Aero Engr
	LERC/Shaw, R. J.	

**NAG 5-277 University of Nebraska - Lincoln 3560**  
Bidirectional reflectance modeling of non homogenous plant canopies

Period	Obligations	
09/15/82-03/14/86	FY85: \$10,000	TOTAL: \$139,044
Prin. Invest.	NASA Tech. Officer	CASE Category
Norman, J. M.	GSFC/Kimes, D. S.	55-Agriculture Sci

**NAG 5-282 University of Nebraska - Lincoln 3561**  
Ultraviolet spectroscopy of the bright Cepheids

Period	Obligations	
11/01/82-05/31/84	FY85:	TOTAL: \$7,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Schmidt, E. G.	GSFC/Kondo, Y.	11-Astronomy
Parsons, S. B.		

**NAG 5-561 University of Nebraska - Lincoln 3562**  
Comparison of latent and sensible heat fluxes

Period	Obligations	
06/01/85-05/31/86	FY85: \$40,000	TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Blad, B.	GSFC/Schmugge, T. J.	31-Atmos Sci
Hubbard, K. G.	GSFC/Gurney, R. J.	
Norman, J. M.		

**NAS 9-16636 University of Nebraska - Lincoln 3563**  
Field measurements and modeling of corn and soybean moisture stress

Period	Obligations	
06/14/82-09/30/84	FY85:	TOTAL: \$166,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Blad, B. L.	JSC/Browne, I. D.	39-Env Sci, NEC
	JSC/Pitts, D. E.	

**NGL 28-004-020 University of Nebraska - Lincoln 3564**  
Applications of remote sensing in resource management in Nebraska

Period	Obligations	
04/20/72-04/30/87	FY85: \$70,000	TOTAL: \$1,345,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Carlson, M. P.	HQ-EL/Tuyahov, A. J.	39-Env Sci, NEC

**NGR 28-004-021 University of Nebraska - Lincoln 3565**  
Interaction of radiation with planetary gases

Period	Obligations	
02/23/73-06/30/86	FY85: \$36,500	TOTAL: \$527,568
Prin. Invest.	NASA Tech. Officer	CASE Category
Samson, J. A.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Quaide, W. L.	

**NGT 28-004-801 University of Nebraska - Lincoln 3566**  
NASA graduate student researchers program

Period	Obligations	
09/01/83-08/31/86	FY85:	TOTAL: \$29,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Blad, B. L.	HQ-LB/Owens, F. C.	55-Agriculture Sci

## NASA'S UNIVERSITY PROGRAM NEW HAMPSHIRE (Continued)

### NAS 5-28406 University of New Hampshire - Durham 3595

Analysis of Pioneer 10 and 11 data

Period	Obligations	
04/17/84-02/15/85	FY85:	TOTAL: \$37,247
Prin. Invest.	NASA Tech. Officer	CASE Category
Webber, W. R.	GSFC/Trainor, J. H.	11-Astronomy

### NAS 5-28609 University of New Hampshire - Durham 3596

On orbit operations and data analysis of the gamma ray experiment of the Solar Maximum Mission spacecraft

Period	Obligations	
10/16/84-10/15/85	FY85: \$528,035	TOTAL: \$528,035
Prin. Invest.	NASA Tech. Officer	CASE Category
Chupp, E. L.	GSFC/Underwood, C. H.	13-Physics

### NAS 8-36187 University of New Hampshire - Durham 3597

Construction of a suprathermal in composition spectrometer for the topaz rocket flight

Period	Obligations	
09/14/84-09/13/85	FY85:	TOTAL: \$38,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Arnoldy, R. L.	MSFC/Moore, T. E.	19-Phys Sci, NEC
	MSFC/Fields, S. A.	

### NCC 2-27 University of New Hampshire - Durham 3599

Controlled ecology life support system workshops: The biological problems and experimental program

Period	Obligations	
10/01/79-06/30/86	FY85: \$85,740	TOTAL: \$699,040
Prin. Invest.	NASA Tech. Officer	CASE Category
Moore, B.	ARC/MacElroy, R. D.	51-Biological Sci

### NCC 2-209 University of New Hampshire - Durham 3600

Control of plant growth within a CELSS

Period	Obligations	
09/01/82-10/31/85	FY85: \$104,376	TOTAL: \$295,269
Prin. Invest.	NASA Tech. Officer	CASE Category
Moore, B., III	ARC/MacElroy, R. D.	51-Biological Sci
Schwartzkopf, S.	ARC/Wydeven, T.	

### NCC 2-210 University of New Hampshire - Durham 3601

Control of gas exchange in gas-closed animal/plant systems: An experimental and modelling study of the feasibility of using organisms as control elements in a CELSS

Period	Obligations	
09/01/82-12/31/85	FY85: \$48,991	TOTAL: \$343,163
Prin. Invest.	NASA Tech. Officer	CASE Category
Averner, M. M.	ARC/MacElroy, R. D.	51-Biological Sci
Moore, B., III	ARC/Wydeven, T.	

### NGL 30-002-021 University of New Hampshire - Durham 3602

Investigation and development of techniques for solar neutron and gamma ray detection

Period	Obligations	
02/28/66-01/31/86	FY85: \$277,000	TOTAL: \$2,124,365
Prin. Invest.	NASA Tech. Officer	CASE Category
Chupp, E. L.	HQ-EZ/Cline, T. L.	11-Astronomy
	HQ-EZ/Kaluzienski, L. J.	

### NGR 30-002-052 University of New Hampshire - Durham 3603

Research program in area of cosmic ray and X-ray astronomy

Period	Obligations	
02/12/70-09/30/85	FY85: \$135,000	TOTAL: \$1,842,308
Prin. Invest.	NASA Tech. Officer	CASE Category
Webber, W. R.	HQ-EZ/Ormes, J. F.	11-Astronomy
	HQ-EZ/Opp, A. G.	

### NGT 29-004-800 University of New Hampshire - Durham 3604

NASA graduate student researchers program

Period	Obligations	
06/01/85-05/31/86	FY85: \$16,160	TOTAL: \$16,160
Prin. Invest.	NASA Tech. Officer	CASE Category
Hollweg, J. V.	HQ-LE/Owens, F. C.	13-Physics

### NSG 7411 University of New Hampshire - Durham 3605

Theoretical studies in solar particle physics

Period	Obligations	
10/01/77-10/31/85	FY85: \$60,000	TOTAL: \$330,265
Prin. Invest.	NASA Tech. Officer	CASE Category
Hollweg, J. L.	HQ-EZ/Spicer, D. S.	13-Physics

### NSG 7481 University of New Hampshire - Durham 3606

Application of a double Compton telescope to measurements of the 1-15 MeV extra-terrestrial gamma rays

Period	Obligations	
03/01/78-07/31/86	FY85: \$20,000	TOTAL: \$314,919
Prin. Invest.	NASA Tech. Officer	CASE Category
Lockwood, J. A.	HQ-EZ/Kaluzienski, L. J.	11-Astronomy
Webber, W. R.	HQ-EZ/Cline, T. L.	

## NEW JERSEY

### NAG 1-186 Princeton University 3607

Accelerated solution methods for inviscid transonic flows

Period	Obligations	
12/03/81-01/02/86	FY85: \$80,000	TOTAL: \$360,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Jameson, A.	LARC/Salas, M. D.	41-Aero Engr
Baker, T. J.	LARC/Keller, J. D.	

### NAG 1-494 Princeton University 3608

Study of a special-purpose Navier-Stokes computer

Period	Obligations	
07/01/84-03/31/86	FY85: \$397,486	TOTAL: \$446,997
Prin. Invest.	NASA Tech. Officer	CASE Category
Nosenchuck, D. M.	LARC/Zang, T. A.	41-Aero Engr
Littman, M. G.	LARC/Dwoyer, D. L.	

**NASA'S UNIVERSITY PROGRAM  
NEW JERSEY (Continued)**

**NAG 1-520** **Princeton University** **3609**  
An optimization model for the U.S. Air traffic system  
*Period* *Obligations*  
09/15/84-09/14/85 FY85: TOTAL: \$53,632  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mulvey, J. M. LARC/Bergeron, H. P. 41-Aero Engr

**NAG 1-545** **Princeton University** **3610**  
The structure of supersonic turbulent boundary layers on curved surfaces  
*Period* *Obligations*  
12/01/84-11/30/85 FY85: \$79,329 TOTAL: \$79,329  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Smits, J. LARC/Sawyer, W. C. 19-Phys Sci, NEC  
Bogdonoff, S. M. LARC/Dillon, J. L.

**NAG 2-96** **Princeton University** **3611**  
Numerical calculation of transonic flows past complex aerodynamic configurations  
*Period* *Obligations*  
02/01/81-03/31/86 FY85: \$50,004 TOTAL: \$249,954  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Jameson, A. ARC/Hicks, R. M. 41-Aero Engr

**NAG 2-109** **Princeton University** **3612**  
Three-dimensional shock wave/turbulent boundary layer interaction experiments  
*Period* *Obligations*  
04/01/81-12/31/84 FY85: TOTAL: \$154,993  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Holder, M. ARC/Horstman, C. C. 41-Aero Engr  
Bogdonoff, S. M. ARC/Marvin, J. G.

**NAG 2-244** **Princeton University** **3613**  
Studies in helicopter aerodynamics and control  
*Period* *Obligations*  
07/01/83-12/31/85 FY85: \$150,001 TOTAL: \$313,425  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Curtiss, H. C. ARC/Decker, W. A. 41-Aero Engr  
ARC/Ciolani, L. S.

**NAG 3-259** **Princeton University** **3614**  
Behavior of fluid globules in external fields  
*Period* *Obligations*  
02/20/82-11/30/89 FY85: \$46,593 TOTAL: \$116,788  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Saville, D. A. LERC/Chai, A. T. 13-Physics

**NAG 3-308** **Princeton University** **3615**  
Nonlinear flutter of fan and compressor blades  
*Period* *Obligations*  
10/01/82-01/30/86 FY85: \$35,000 TOTAL: \$119,596  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bendiksen, O. O. LERC/Kielb, R. E. 41-Aero Engr

**NAG 3-310** **Princeton University** **3616**  
The oxidation degradation of aromatic compounds  
*Period* *Obligations*  
09/01/82-08/28/86 FY85: TOTAL: \$225,790  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Glassman, I. LERC/Brabbs, T. A. 12-Chemistry  
Brezinsky, K. LERC/Lezberg, E. A.

**NAG 3-353** **Princeton University** **3617**  
Role of surface generated radicals in catalytic combustion  
*Period* *Obligations*  
11/15/82-11/30/84 FY85: TOTAL: \$97,917  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bracco, F. V. LERC/Anderson, D. N. 41-Aero Engr  
Royce, B. S.  
Santavicca, D. A.

**NAG 3-380** **Princeton University** **3618**  
Fundamental study of droplet combustion at reduced gravity  
*Period* *Obligations*  
12/23/82-05/21/85 FY85: \$74,830 TOTAL: \$245,315  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Williams, F. A. LERC/Sacksteder, K. 49-Engr, NEC

**NAG 3-447** **Princeton University** **3619**  
Roles of fluid motion and other transport phenomena in morphology of materials  
*Period* *Obligations*  
07/15/83-07/12/86 FY85: \$32,000 TOTAL: \$142,455  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Saville, D. A. LERC/Chai, A. 47-Materials Engr  
Russell, W. B. LERC/Serafini, T. T.

**NAG 3-584** **Princeton University** **3620**  
The formation of ordered microstructures and related processes  
*Period* *Obligations*  
11/15/84-11/14/85 FY85: \$38,663 TOTAL: \$38,663  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Russell, W. B. LERC/Millard, M. L. 49-Engr, NEC

**NAG 5-241** **Princeton University** **3621**  
Evaluation of selected detector array for space applications  
*Period* *Obligations*  
06/01/82-06/30/85 FY85: TOTAL: \$49,182  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gunn, J. E. GSFC/Kalshoven, J. 42-Astro Engr

**NAG 5-491** **Princeton University** **3622**  
Influence of scale and variability in the parametrization of hydrological processes  
*Period* *Obligations*  
02/01/85-01/31/86 FY85: \$80,000 TOTAL: \$80,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wood, E. F. GSFC/Schmugge, T. J.  
Milly, P. C. 32-Geological Sci

**NASA'S UNIVERSITY PROGRAM**  
**NEW JERSEY (Continued)**

**NAG 5-616** **Princeton University** **3623**  
 Interstellar medium absorption profile spectrograph (IMAPS)  
*Period Obligations*  
 01/01/83-12/31/85 FY85: \$687,963 TOTAL: \$1,215,682  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jenkins, E. B. GSFC/Early, L. J. 13-Physics  
 GSFC/Pless, R. H.

**NAGW 626** **Princeton University** **3630**  
 Theoretical predictions and preparations for space telescope observations of gravitational lenses  
*Period Obligations*  
 07/01/84-06/30/86 FY85: TOTAL: \$80,071  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Turner, E. HQ-EZ/Stencel, R. E. 11-Astronomy  
 HQ-EZ/Weiler, E. J.

**NAG 8-521** **Princeton University** **3624**  
 Ground based experimental test program to duplicate and study the spacecraft glow phenomena  
*Period Obligations*  
 04/08/85-10/08/85 FY85: \$195,400 TOTAL: \$195,400  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Langer, W. D. MSFC/Clarke, J. T. 13-Physics

**NAGW 765** **Princeton University** **3631**  
 The universe at moderate redshift  
*Period Obligations*  
 07/01/85-02/28/86 FY85: \$150,023 TOTAL: \$150,023  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Ostriker, J. P. HQ-EZ/Stencel, R. E. 11-Astronomy  
 HQ-EZ/Weiler, E. J.

**NAGW 10** **Princeton University** **3625**  
 Gaseous halos of galaxies  
*Period Obligations*  
 11/01/79-12/31/84 FY85: TOTAL: \$124,338  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 York, D. HQ-EZ/Weiler, E. J. 11-Astronomy  
 HQ-EZ/Boggess, N. W.

**NAS 1-17234** **Princeton University** **3632**  
 Inference of atmospheric parameters from shuttle upper atmosphere spectrometer (SUMS) experiment  
*Period Obligations*  
 12/17/82-08/15/85 FY85: TOTAL: \$77,667  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bienkowski, G. K. LARC/Blanchard, R. C. 41-Aero Engr  
 LARC/Jones, J. J.

**NAGW 240** **Princeton University** **3626**  
 Study of the structure of turbulent shear flows at supersonic speeds and huge Reynolds numbers  
*Period Obligations*  
 09/01/81-09/30/84 FY85: TOTAL: \$600,935  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bogdonoff, S. HQ-RT/Hicks, G. 41-Aero Engr  
 Smits, A. HQ-RT/Brown, C. E.

**NAS 1-17247** **Princeton University** **3633**  
 A study of the feasibility of the TPSTF for high energy aerothermal testing  
*Period Obligations*  
 01/05/83-01/31/86 FY85: TOTAL: \$38,048  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bogdonoff, S. M. LARC/Wieting, A. R. 49-Engr, NEC

**NAGW 445** **Princeton University** **3627**  
 Map galactic radiation at wave length = 1 cm  
*Period Obligations*  
 06/01/83-05/31/86 FY85: \$89,886 TOTAL: \$325,466  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Wilkinson, D. HQ-EZ/Boggess, N. W. 11-Astronomy  
 HQ-EZ/Weiler, E. J.

**NAS 3-24640** **Princeton University** **3634**  
 Scientific support for a space shuttle droplet burning experiment  
*Period Obligations*  
 05/29/85-05/04/89 FY85: \$30,000 TOTAL: \$30,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Williams, F. A. LERC/Sacksteder, K. R. 49-Engr, NEC  
 Dryer, F. L.

**NAGW 477** **Princeton University** **3628**  
 Copernicus data reduction and analysis  
*Period Obligations*  
 09/01/83-06/30/86 FY85: TOTAL: \$263,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Rogerson, J. B., Jr. HQ-EZ/Stencel, R. E. 11-Astronomy  
 Spitzer, L., Jr. HQ-EZ/Weiler, E. J.

**NAS 5-25084** **Princeton University** **3635**  
 Data and operations team leader for the space telescope project  
*Period Obligations*  
 05/23/78-06/19/85 FY85: \$24,000 TOTAL: \$633,127  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Groth, E. J. GSFC/Locke, M. 11-Astronomy

**NAGW 611** **Princeton University** **3629**  
 Ferric oxides/hydroxides on Mars  
*Period Obligations*  
 05/15/84-04/30/86 FY85: \$45,280 TOTAL: \$90,298  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hargraves, R. B. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAS 5-26268** **Princeton University** **3636**  
 Design, development and fabrication of interstellar medium absorption profile spectrograph experiment  
*Period Obligations*  
 08/21/80-06/30/85 FY85: TOTAL: \$1,243,281  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jenkins, E. B. GSFC/Cyphers, H. 11-Astronomy



**NASA'S UNIVERSITY PROGRAM  
NEW JERSEY (Continued)**

**NAS 5-27590 Princeton University 3637**  
Provide pre-launch science data requirements and post launch data analysis for COBE

Period	Obligations	
05/31/83-12/31/89	FY85: \$78,000	TOTAL: \$193,150
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilkenson, D. T.	GSFC/Mather, J.	11-Astronomy

**NAS 5-29142 Princeton University 3638**  
Studies on the Hubble space telescope Goddard project

Period	Obligations	
06/19/85-06/19/90	FY85: \$76,000	TOTAL: \$76,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Groth, E. J.	GSFC/Locke, M.	11-Astronomy

**NAS 8-32614 Princeton University 3639**  
Develop and test mathematical models of the three dimensional flow field and particle motions

Period	Obligations	
08/23/77-01/31/86	FY85: \$8,041	TOTAL: \$579,585
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Saville, D. A.	MSFC/Fogle, W.	51-Biological Sci
	MSFC/Williams, J. R.	

**NGL 31-001-007 Princeton University 3640**  
Theoretical and experimental studies of ultraviolet phenomena of astronomical interest and galactic gas dynamics

Period	Obligations	
05/06/63-08/31/86	FY85: \$48,125	TOTAL: \$2,263,380
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Draine, B. T.	HQ-EZ/Stenal, R. E.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

**NGL 31-001-252 Princeton University 3641**  
Air traffic control technology

Period	Obligations	
11/15/71-01/31/88	FY85: \$99,735	TOTAL: \$953,068
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stengel, R. F.	LARC/Hood, R. V.	41-Aero Engr
Sweet, L. M.		

**NGT 31-001-801 Princeton University 3642**  
NASA graduate student researchers program

Period	Obligations	
06/01/82-11/30/83	FY85:	TOTAL: \$14,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fels, S. B.	HQ-LB/Owens, F. C.	32-Geological Sci

**NGT 31-001-802 Princeton University 3643**  
NASA graduate student researchers program

Period	Obligations	
05/01/83-04/30/85	FY85:	TOTAL: \$28,800
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Perry, M.	HQ-LB/Owens, F. C.	13-Physics

**NGT 31-001-803 Princeton University 3644**  
NASA graduate student researchers program

Period	Obligations	
07/01/84-06/30/86	FY85: \$15,200	TOTAL: \$28,300
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mahlman, J.	HQ-LB/Owens, F. C.	19-Phys Sci, NEC

**NSG 5248 Princeton University 3645**  
Observational research on the IUE satellite

Period	Obligations	
03/01/78-07/31/86	FY85: \$16,600	TOTAL: \$65,112
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Jenkins, E. B.	GSFC/Kondo, Y.	11-Astronomy
York, D. G.		
Wu, C. C.		

**NSG 7256 Princeton University 3646**  
Research in extragalactic astrophysics

Period	Obligations	
07/01/76-12/31/83	FY85:	TOTAL: \$92,755
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bahcall, N. A.	HQ-EZ/Weiler, E. J.	11-Astronomy
	HQ-EZ/Boggess, N. W.	

**NSG 7302 Princeton University 3647**  
New radiometers for balloon 3 K isotropy experiment

Period	Obligations	
11/15/76-12/31/85	FY85: \$31,000	TOTAL: \$260,811
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilkinson, D. T.	HQ-EZ/Boggess, N. W.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

**NSG 7618 Princeton University 3648**  
Photon counting image sensor development for astronomical applications

Period	Obligations	
07/01/79-09/14/86	FY85:	TOTAL: \$439,932
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Jenkins, E. B.	HQ-EZ/Weiler, E. J.	11-Astronomy
Timothy, J. G.	HQ-EZ/Boggess, N. W.	

**NAG 1-434 Rutgers State University - Camden 3649**  
Quantum theoretical study of polyimides and experimental verification of dopant sites

Period	Obligations	
12/07/83-03/31/86	FY85: \$17,103	TOTAL: \$42,945
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Burke, L. A.	LARC/Phillips, D. H.	12-Chemistry
	LARC/Swann, R. T.	

**NAG 8-454 Rutgers State University - New Brunswick 3650**  
Statistical analyses of the X-ray sky using the HEAO A-1 database

Period	Obligations	
07/01/83-12/30/84	FY85:	TOTAL: \$20,653
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Matilsky, T.	MSFC/Stone, J. F.	11-Astronomy

**NAG 9-26 Rutgers State University - New Brunswick 3651**  
Beryllium isotopes in meteorites

Period	Obligations	
02/01/83-02/28/86	FY85: \$20,380	TOTAL: \$62,511
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Herzog, G. F.	JSC/Browne, I. D.	11-Astronomy
Kruse, T. H.		

# **NASA'S UNIVERSITY PROGRAM** **NEW JERSEY (Continued)**

**NAG 9-35 Rutgers State University - New Brunswick 3652**  
Metal-silicate relationships in differentiated meteorites

Period	Obligations	
02/01/83-01/31/86	FY85: \$32,060	TOTAL: \$85,120
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hewins, R. H.	JSC/Browne, I. D.	32-Geological Sci

**NAS 9-17276 Univ of Medicine And Dentistry 3659**  
Study of protein metabolism during space flight

Period	Obligations	
11/01/84-02/01/87	FY85: \$212,000	TOTAL: \$212,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stein, P.	JSC/Newkirk, K.	56-Medical Sciences

**NAGW 142 Rutgers State University - New Brunswick 3653**  
Beryllium isotopes in meteorites

Period	Obligations	
03/01/81-02/28/84	FY85:	TOTAL: \$52,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Herzog, G. F.	HQ-EL/Taylor, L. A.	32-Geological Sci
	HQ-EL/Quaide, W. L.	

## **NEW MEXICO**

**NAG 5-432 New Mexico Institute of Mining & Tech 3660**  
Flare like activity in selected single late-type stars

Period	Obligations	
07/01/84-07/31/86	FY85: \$19,000	TOTAL: \$27,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gibson, D. M.	GSFC/Kondo, Y.	11-Astronomy
Linsky, J. L.		
Stencel, R. E.		

**NAG 8-473 New Mexico Institute of Mining & Tech 3661**  
X-ray variability and coronal structure of RS CVN binaries

Period	Obligations	
06/11/84-06/10/85	FY85:	TOTAL: \$13,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gibson, D. M.	MSFC/Johnson, W. G.	11-Astronomy
Walter, F. M.		

**NAG 8-512 New Mexico Institute of Mining & Tech 3662**  
X-ray eclipses of the active binary stars ar lac and yy gem

Period	Obligations	
01/16/85-01/15/86	FY85: \$10,770	TOTAL: \$10,770
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gibson, D. M.	MSFC/Johnson, W. G.	11-Astronomy

**NAG 9-74 New Mexico Institute of Mining & Tech 3663**  
Study geochemical constraints on the origin of Archean granites in southern India

Period	Obligations	
02/01/84-01/31/86	FY85: \$20,000	TOTAL: \$47,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Condie, K. C.	JSC/Phinney, W. C.	32-Geological Sci
Allen, P.		

**NAGW 378 New Mexico Institute of Mining & Tech 3664**  
Funding for the Sixth International Symposium on Environmental Biogeochemistry

Period	Obligations	
10/01/82-12/31/83	FY85:	TOTAL: \$5,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brierley, J. A.	HQ-EB/Geib, D. S.	51-Biological Sci
	HQ-EB/Devincenzi, D. L.	

**NAS 8-33817 New Mexico Institute of Mining & Tech 3665**  
Night-time/day-time orbital survey of lightning experiment support

Period	Obligations	
04/01/80-03/31/86	FY85:	TOTAL: \$63,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brooks, M.	MSFC/Vaughan, O. H.	31-Atmos Sci
	MSFC/Christian, H. J.	

**NCA 2-61 Rutgers State University - New Brunswick 3654**  
Stability of flow past a circular cylinder (joint research interchange)

Period	Obligations	
09/01/85-08/31/87	FY85: \$40,000	TOTAL: \$40,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zebib, A.	ARC/Tobak, M.	41-Aero Engr
	ARC/Schiff, L. B.	

**NSG 7327 Rutgers State University - New Brunswick 3655**  
Research and studies of metal silicate relationships in howardite breccias

Period	Obligations	
02/01/77-01/31/84	FY85:	TOTAL: \$171,144
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hewins, R. H.	HQ-EL/Taylor, L. A.	32-Geological Sci
	HQ-EL/Quaide, W. L.	

**NAG 3-514 Rutgers State University - Piscataway 3656**  
Nickel electrode improvement program

Period	Obligations	
01/07/84-07/06/85	FY85:	TOTAL: \$45,168
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Freeman, R. W.	LERC/Reid, M. A.	43-Chem Engr
Salkind, A. J.	LERC/O'donnell, P. M.	

**NAG 1-587 Stevens Institute of Technology 3657**  
Completion of gloss gate level simulation language

Period	Obligations	
07/01/85-06/30/86	FY85: \$50,000	TOTAL: \$50,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Swern, F. L.	LARC/Bavuso, S. J.	29-Math/Computer, NEC
	LARC/Lupton, A. O.	

**NAG 5-371 Stevens Institute of Technology 3658**  
Process control and communication for data-base uniformization

Period	Obligations	
09/15/83-05/31/86	FY85: \$25,000	TOTAL: \$45,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sack, I. H.	GSFC/Smith, P. H.	22-Computer Science
	GSFC/Berbert, J. J.	

# **NASA'S UNIVERSITY PROGRAM** **NEW MEXICO (Continued)**

## **NCA 2-511301 New Mexico Institute of Mining & Tech 3666** Comparison of optically thick compact source spectra with observations

Period	Obligations	
04/15/83-04/14/85	FY85:	TOTAL: \$18,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Eilek, J. A.	ARC/Caroff, L. J.	11-Astronomy

## **NCA 5-69 New Mexico Institute of Mining & Tech 3667** Cometary observations and research activities

Period	Obligations	
08/23/76-12/31/86	FY85: \$5,000	TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Moore, E.	GSFC/Niedner, M.	11-Astronomy

## **NCA 5-71 New Mexico Institute of Mining & Tech 3668** Cometary and astrophysical research activities

Period	Obligations	
11/01/76-09/30/86	FY85: \$110,000	TOTAL: \$281,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Holmes, C. R.	GSFC/Niedner, M.	11-Astronomy

## **NCC 2-364 New Mexico Institute of Mining & Tech 3669** Evolution of photon and particle spectra in compact luminous objects

Period	Obligations	
08/01/85-07/31/86	FY85: \$11,500	TOTAL: \$11,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Eilek, J. A.	ARC/Caroff, L. J.	11-Astronomy

## **NAGW 110 New Mexico State University - Las Cruces 3670** Continuation of a cosmic ray research program using a superconducting magnet spectrometer

Period	Obligations	
08/01/80-08/31/85	FY85: \$135,117	TOTAL: \$482,668
Prin. Invest.	NASA Tech. Officer	CASE Category
Golden, R. L.	HQ-EZ/Ormes, J. F.	11-Astronomy
	HQ-EZ/Opp, A. G.	

## **NAGW 167 New Mexico State University - Las Cruces 3671** Analysis of Jovian atmospheric motions

Period	Obligations	
04/01/81-05/31/84	FY85:	TOTAL: \$80,229
Prin. Invest.	NASA Tech. Officer	CASE Category
Beebe, R. F.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Evans, N.	

## **NAGW 645 New Mexico State University - Las Cruces 3672** Analysis of historical data related to the energy balance in Jupiter's atmosphere

Period	Obligations	
08/15/84-08/14/86	FY85: \$13,969	TOTAL: \$39,117
Prin. Invest.	NASA Tech. Officer	CASE Category
Beebe, R. F.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Quaide, W. L.	

## **NAS 5-26332 New Mexico State University - Las Cruces 3673** Field and analytical engineering support for the sounding rocket program

Period	Obligations	
09/10/80-04/30/85	FY85: \$1,377,278	TOTAL: \$8,577,166
Prin. Invest.	NASA Tech. Officer	CASE Category
Lawrence, H.	GSFC/Pincus, R. B.	49-Engr, NEC
Connell, H.	GSFC/Cameron, J. W.	

## **NAS 5-26662 New Mexico State University - Las Cruces 3674** Provide developmental and technological support for the ultraviolet imaging telescope (UIT) shuttle electronics

Period	Obligations	
08/12/81-08/11/88	FY85:	TOTAL: \$578,401
Prin. Invest.	NASA Tech. Officer	CASE Category
Gilcrease, A.	GSFC/Blum, A.	45-Elec Engr

## **NAS 5-28928 New Mexico State University - Las Cruces 3675** Field and analytical engineering support

Period	Obligations	
05/01/85-04/30/88	FY85: \$832,257	TOTAL: \$832,257
Prin. Invest.	NASA Tech. Officer	CASE Category
Lane, K.	GSFC/West, W. W.	41-Aero Engr
	GSFC/Powell, W. R.	

## **NAS 5-29149 New Mexico State University - Las Cruces 3676** Spartan/gas/shuttle related programs engineering support

Period	Obligations	
05/16/85-04/30/87	FY85: \$1,142,340	TOTAL: \$1,142,340
Prin. Invest.	NASA Tech. Officer	CASE Category
Gilcrease, A.	GSFC/Pincus, B. R.	49-Engr, NEC

## **NAS 9-95519 New Mexico State University - Las Cruces 3677** Synthetic aperture radar antenna trade-off study

Period	Obligations	
06/30/81-02/28/85	FY85:	TOTAL: \$67,990
Prin. Invest.	NASA Tech. Officer	CASE Category
Blevins, B.	JSC/Nitschke, H. A.	39-Env Sci, NEC

## **NAS 9-95557 New Mexico State University - Las Cruces 3678** Shuttle ku-band radar flight test support at WSMR

Period	Obligations	
07/15/83-12/31/85	FY85:	TOTAL: \$14,913
Prin. Invest.	NASA Tech. Officer	CASE Category
Waterman, A.	JSC/Lapoint, D. A.	39-Env Sci, NEC

## **NCC 2-306 New Mexico State University - Las Cruces 3679** Applications of link weighted networks to man machine interfaces

Period	Obligations	
07/01/84-10/31/85	FY85: \$20,000	TOTAL: \$24,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Paap, K. R.	ARC/Remington, R. W.	69-Psych, NEC
Roske-hofstrand, R. J.	ARC/Palmer, E.	

# **NASA'S UNIVERSITY PROGRAM** **NEW MEXICO (Continued)**

## **NGL 32-003-001 New Mexico State University - Las Cruces 3680**

Photographic patrol and study of physical conditions on the Moon and planets

<i>Period</i>	<i>Obligations</i>	
04/15/61-09/30/85	FY85: \$47,071	TOTAL: \$2,213,321
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fortin, P. E.	HQ-EL/Brunk, W. E.	11-Astronomy
Van Aken, J. M.	HQ-EL/Hillman, J. J.	

## **NAG 8-461 University of New Mexico 3681**

A search for X-ray counterparts of radio jets

<i>Period</i>	<i>Obligations</i>	
11/13/83-11/14/85	FY85:	TOTAL: \$6,648
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Burns, J. O.	MSFC/Johnson, W. G.	11-Astronomy

## **NAG 9-30 University of New Mexico 3682**

The formation and evolution of stony meteorites

<i>Period</i>	<i>Obligations</i>	
02/15/83-02/14/86	FY85: \$246,500	TOTAL: \$705,349
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Keil, K.	JSC/Browne, I. D.	32-Geological Sci
Taylor, G. J.		
Scott, E. R.		

## **NASW 3863 University of New Mexico 3683**

Operation of technology application center application center

<i>Period</i>	<i>Obligations</i>	
10/01/83-09/30/85	FY85: \$200,000	TOTAL: \$400,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Morain, S. A.	HQ-LG/Bivin, R. G., Jr.	99-Multi-Discip
	HQ-LG/Ault, L.	

## **NGR 32-004-082 University of New Mexico 3684**

Search for evidence of dynamic process

<i>Period</i>	<i>Obligations</i>	
06/22/70-04/30/86	FY85: \$32,232	TOTAL: \$392,797
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Elston, W. E.	HQ-EL/Scott, D. H.	32-Geological Sci
	HQ-EL/Holt, H. E.	

## **NGT 32-004-770 University of New Mexico 3685**

A preoperative education program

<i>Period</i>	<i>Obligations</i>	
07/25/77-07/24/86	FY85: \$27,671	TOTAL: \$134,666
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Williams, R.	HQ-U/Pohly, J.	49-Engr, NEC

## **NGT 32-004-771 University of New Mexico 3686**

NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
05/15/85-05/14/86	FY85: \$17,966	TOTAL: \$17,966
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kleil, K.	HQ-LE/Owens, F. C.	32-Geological Sci

# **NEW YORK**

## **NCA 2-71 Alfred University 3687**

Fractography of reusable surface insulation for space shuttle and advanced reentry vehicles (joint research interchange)

<i>Period</i>	<i>Obligations</i>	
09/01/85-08/31/86	FY85: \$12,353	TOTAL: \$12,353
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Varner, J.	ARC/Goldstein, H. E.	47-Materials Engr

## **NAG 1-418 Brooklyn College 3688**

Theoretical studies of heavy-ion collisions

<i>Period</i>	<i>Obligations</i>	
10/01/83-05/16/86	FY85: \$31,047	TOTAL: \$56,935
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Franco, V.	LARC/Townsend, L. W.	13-Physics
	LARC/Conway, E. J.	

## **NAG 5-711 Brooklyn College 3689**

Research relative to database interfaces on heterogeneous database systems

<i>Period</i>	<i>Obligations</i>	
09/01/85-01/31/86	FY85: \$15,000	TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Harrow, K.	GSFC/Jacobs, B.	22-Computer Science
	GSFC/Berbert, J.	

## **NCA 2-75201 Brooklyn College 3690**

Effects of exposure to abnormal G on mitochondrial aging in drosophila and mice

<i>Period</i>	<i>Obligations</i>	
04/01/82-10/01/84	FY85:	TOTAL: \$44,378
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cottrell, S. F.	ARC/Philpott, D. E.	51-Biological Sci

## **NAG 1-6 City College of New York 3691**

An adaptive learning control system for large flexible space structures

<i>Period</i>	<i>Obligations</i>	
11/01/79-08/31/84	FY85:	TOTAL: \$223,545
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Thau, F. E.	LARC/Montgomery, R. C.	42-Astro Engr
	LARC/Williams, J. P.	

## **NAG 1-377 City College of New York 3692**

The measurement of Reynolds stresses in turbulent compressible flow

<i>Period</i>	<i>Obligations</i>	
06/01/83-05/31/86	FY85: \$150,000	TOTAL: \$650,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Johnson, J. A., III	LARC/Bushnell, D. M.	41-Aero Engr
	LARC/Anders, J. B., Jr.	

## **NAG 1-499 City College of New York 3693**

Photodynamics and physics behind tunable solid state lasers

<i>Period</i>	<i>Obligations</i>	
07/01/84-06/30/85	FY85:	TOTAL: \$75,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Alfano, R. R.	LARC/Byrik, C. E.	13-Physics
	LARC/Nash, P. L.	

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**NAG 3-122 City College of New York 3694**  
Experimental study of turbulence in blade end wall corner region  
*Period* *Obligations*  
10/20/80-08/14/86 FY85: \$19,995 TOTAL: \$326,134  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Raj, R. LERC/Boldman, D. R. 41-Aero Engr

**NAG 3-130 City College of New York 3695**  
Relaxation kinetics in organic glasses  
*Period* *Obligations*  
11/10/80-01/06/85 FY85: TOTAL: \$259,949  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Alfano, R. R. LERC/Lauver, R. W. 13-Physics

**NAG 5-372 City College of New York 3696**  
Theoretical research in solar and atmospheric physics  
*Period* *Obligations*  
10/01/83-11/30/85 FY85: \$10,000 TOTAL: \$20,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Arons, M. GSFC/Canuto, V. C. 31-Atmos Sci

**NAS 9-16473 City College of New York 3697**  
Investigation of digital encoding techniques for television transmission  
*Period* *Obligations*  
10/01/81-11/30/83 FY85: TOTAL: \$40,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schilling, D. L. JSC/Schadelbauer, S. 45-Elec Engr

**NCA 2-150401 City College of New York 3698**  
Re-distribution of angular momentum by spiral density waves in a protostar disk system  
*Period* *Obligations*  
06/15/84-06/14/85 FY85: TOTAL: \$3,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Yuan, C. ARC/Cassen, P. M. 13-Physics  
ARC/Smith, B. F.

**NGL 33-013-040 City College of New York 3699**  
Theoretical research in astrophysics and astronomy  
*Period* *Obligations*  
04/23/69-11/30/84 FY85: TOTAL: \$454,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Arons, M. GSFC/Thaddeus, P. 11-Astronomy  
GSFC/Green, S.

**NAGW 266 City Univ of NY - Grad School & Univ Cen 3700**  
Oceanographic and meteorological research based on the data products of seas  
*Period* *Obligations*  
10/01/81-09/30/84 FY85: TOTAL: \$370,066  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pierson, W. J. HQ-EE/Patzert, W. C. 33-Oceanography  
HQ-EE/Wilson, W. S.

**NAS 8-34622 City Univ of NY - Grad School & Univ Cen 3701**  
Research study: Theory and modeling of atmospheric turbulence  
*Period* *Obligations*  
09/01/81-02/29/84 FY85: TOTAL: \$74,981  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tchen, C. H. MSFC/Alexander, M. B. 31-Atmos Sci  
MSFC/Fichtl, G. H.

**NAG 1-284 Clarkson University 3702**  
Effects of molecular weight on the single lap shear creep and constant strain rate behavior of a thermoplastic adhesive  
*Period* *Obligations*  
06/01/82-09/30/84 FY85: TOTAL: \$29,093  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sancaktak, E. LARC/Johnson, W. S. 46-Mech Engr  
LARC/St Clair, T. L.

**NAG 1-397 Clarkson University 3703**  
Bridgman crystal growth  
*Period* *Obligations*  
08/05/83-01/31/86 FY85: \$56,538 TOTAL: \$123,075  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Carlson, F. M. LARC/Fripp, A. L. 47-Materials Engr  
LARC/Crouch, R. K.

**NAG 8-480 Clarkson University 3704**  
Influence of connection on microstructure  
*Period* *Obligations*  
06/15/84-12/15/85 FY85: \$35,000 TOTAL: \$102,959  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wilcox, W. R. MSFC/Reeves, F. 43-Chem Engr

**NAG 8-541 Clarkson University 3705**  
Modelling directional solidification  
*Period* *Obligations*  
09/01/85-08/31/86 FY85: \$95,000 TOTAL: \$95,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wilcox, W. R. MSFC/Yates, I. C. 43-Chem Engr

**NAS 8-32944 Clarkson University 3706**  
Experiment for materials processing in space, physical phenomena in containerless glass processing  
*Period* *Obligations*  
02/23/78-12/31/85 FY85: TOTAL: \$899,502  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Subramanian, R. S. MSFC/Fallon, R. A. 13-Physics  
Cole, R. MSFC/Johnson, J. L.

**NAS 8-34750 Clarkson University 3707**  
AGCE related studies of baroclinic flows  
*Period* *Obligations*  
05/28/82-10/27/83 FY85: TOTAL: \$28,789  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hyun, J. MSFC/Fowles, W. W. 31-Atmos Sci  
MSFC/Leslie, F.

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**NAS 8-34887**                      **Clarkson University**                      **3708**  
Eutectic solidification study  
*Period*                                      *Obligations*  
05/03/82-08/02/84                      FY85:                      TOTAL: \$65,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Wilcox, W. R.                      MSFC/Reeves, F. A.                      47-Materials Engr

**NAS 8-34891**                      **Clarkson University**                      **3709**  
Modelling directional solidification  
*Period*                                      *Obligations*  
06/01/82-09/30/85                      FY85: \$28,000                      TOTAL: \$240,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Wilcox, W. R.                      MSFC/Moore, W. W., Jr.                      19-Phys Sci, NEC  
Papatheodorou, T.

**NCC 2-280**                      **Clarkson University**                      **3710**  
Separated flows near the nose of a body of revolution  
*Period*                                      *Obligations*  
01/01/84-12/31/85                      FY85: \$40,063                      TOTAL: \$80,063  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Lin, S. P.                      ARC/Chapman, G.                      41-Aero Engr  
ARC/Tobak, M.

**NGT 33-011-800**                      **Clarkson University**                      **3711**  
NASA graduate student researchers program  
*Period*                                      *Obligations*  
09/01/84-08/31/86                      FY85: \$18,000                      TOTAL: \$33,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Rasmussen, D.                      HQ-LB/Owens, F. C.                      43-Chem Engr

**NGT 33-011-801**                      **Clarkson University**                      **3712**  
NASA graduate student researchers program  
*Period*                                      *Obligations*  
05/15/85-05/14/86                      FY85: \$18,000                      TOTAL: \$18,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Subramanian, R. S.                      HQ-LE/Owens, F. C.                      43-Chem Engr

**NAG 5-478**                      **Colgate University**                      **3713**  
Infrared heterodyne observations of sunspots  
*Period*                                      *Obligations*  
09/15/84-07/31/86                      FY85: \$13,901                      TOTAL: \$25,005  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Glenar, D. A.                      GSFC/Deming, L. D.                      31-Atmos Sci  
GSFC/Kostiuk, T.

**NAG 1-355**                      **Columbia University**                      **3714**  
Intrinsic adaptive mesh techniques  
*Period*                                      *Obligations*  
04/01/83-10/31/83                      FY85:                      TOTAL: \$50,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Eiseman, P. R.                      LARC/Harris, J. E.                      41-Aero Engr  
Chu, C. K.                      LARC/Dwoyer, D. L.

**NAG 1-427**                      **Columbia University**                      **3715**  
Development of smoothly embedable strut nacelle grids  
*Period*                                      *Obligations*  
11/21/83-11/20/85                      FY85: \$30,000                      TOTAL: \$60,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Eiseman, P. R.                      LARC/Smith, R. E., Jr.                      29-Math/Cmputer, NEC  
Chu, C. K.                      LARC/Shoosmith, J. N.

**NAG 1-479**                      **Columbia University**                      **3716**  
Algebraic and adaptive grid methods  
*Period*                                      *Obligations*  
05/01/84-11/30/85                      FY85: \$50,000                      TOTAL: \$80,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Eiseman, P. R.                      LARC/Erlebacher, G.                      41-Aero Engr  
Chu, C. K.                      LARC/Harris, J. E.

**NAG 1-541**                      **Columbia University**                      **3717**  
Vibrations and structureborne noise in space station  
*Period*                                      *Obligations*  
01/01/85-12/31/85                      FY85: \$70,754                      TOTAL: \$70,754  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Vaicaitis, R.                      LARC/Mixson, J. S.                      41-Aero Engr

**NAG 1-617**                      **Columbia University**                      **3718**  
Grid generations on surfaces in three dimensions  
*Period*                                      *Obligations*  
10/01/85-09/30/86                      FY85: \$34,000                      TOTAL: \$34,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Eiseman, P. R.                      LARC/Smith, R. E.                      29-Math/Cmputer, NEC  
LARC/Shoosmith, J. N.

**NAG 2-324**                      **Columbia University**                      **3719**  
Effects of simulated weightlessness on meiosis, fertilization, and early development in mice  
*Period*                                      *Obligations*  
11/01/84-10/31/85                      FY85: \$54,115                      TOTAL: \$54,115  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Wolgemuth, D. J.                      ARC/Oyama, J.                      56-Medical Sciences

**NAG 3-57**                      **Columbia University**                      **3720**  
The role of cobalt in nickel base superalloys  
*Period*                                      *Obligations*  
07/01/80-09/30/86                      FY85:                      TOTAL: \$526,434  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Tien, J. K.                      LERC/Scheuermann, C. M.                      47-Materials Engr

**NAG 3-410**                      **Columbia University**                      **3721**  
Understanding compatibility in tungsten fiber reinforced composites  
*Period*                                      *Obligations*  
04/01/83-10/29/85                      FY85: \$62,939                      TOTAL: \$145,895  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Tien, J. K.                      LERC/Petrasek, D. W.                      47-Materials Engr  
LERC/Signorelli, R. A.

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**NAG 5-402 Columbia University 3722**  
Geological interpretation of the Earth's gravity field at intermediate wavelengths  
*Period* *Obligations*  
07/01/84-06/30/85 FY85: TOTAL: \$55,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Cochran, J. R. GSFC/Welker, J. E. 32-Geological Sci  
Watts, A. B.

**NAG 5-446 Columbia University 3723**  
Basic studies of the seismic cycle: Differences between intraplate and interplate earthquakes  
*Period* *Obligations*  
08/10/84-12/09/85 FY85: TOTAL: \$29,993  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Scholz, C. H. GSFC/Mead, G. D. 32-Geological Sci

**NAG 5-598 Columbia University 3724**  
Analysis of international wavelength magnetic anomalies over the oceans  
*Period* *Obligations*  
08/15/85-08/14/86 FY85: \$30,000 TOTAL: \$30,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Labrecque, J. L. GSFC/Kouns, C. W. 32-Geological Sci  
Cande, S. C. GSFC/Langel, R. A.

**NAG 5-618 Columbia University 3725**  
X-ray astronomy  
*Period* *Obligations*  
02/01/83-01/31/86 FY85: \$478,320 TOTAL: \$1,078,320  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Novick, R. GSFC/Early, L. J. 13-Physics  
Chanan, G. A. GSFC/Pless, R. H.  
Vartanian, M.

**NAG 8-497 Columbia University 3726**  
Analysis and interpretation of data from the Einstein Observatory (HEAO-2)  
*Period* *Obligations*  
10/01/84-09/30/85 FY85: \$331,075 TOTAL: \$331,075  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Novick, R. MSFC/Johnson, W. G. 11-Astronomy

**NAG 8-513 Columbia University 3727**  
A search for X-ray pulsars  
*Period* *Obligations*  
02/15/85-02/14/86 FY85: \$9,920 TOTAL: \$9,920  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Patterson, J. MSFC/Johnson, W. G. 11-Astronomy

**NAGW 238 Columbia University 3728**  
Studies of bone and cartilage during periods of simulated weightlessness  
*Period* *Obligations*  
08/15/81-03/31/85 FY85: TOTAL: \$173,625  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Doty, S. B. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAGW 346 Columbia University 3729**  
Effects of simulated weightlessness on meiosis fertilization and early development in mice  
*Period* *Obligations*  
07/01/82-04/30/85 FY85: TOTAL: \$123,808  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wolgemuth, D. J. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAGW 567 Columbia University 3730**  
Problems in neutron star physics  
*Period* *Obligations*  
03/15/84-03/14/86 FY85: \$38,141 TOTAL: \$58,141  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shaham, J. HQ-EZ/Kaluzienski, L. J. 11-Astronomy  
HQ-EZ/Cline, T. L.

**NAGW 571 Columbia University 3731**  
Hydrogen and oxygen isotopes and the hydrologic cycle  
*Period* *Obligations*  
01/01/84-12/31/85 FY85: \$54,660 TOTAL: \$105,555  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Broecker, W. S. HQ-EE/Hampson, R. F. 31-Atmos Sci  
White, J. HQ-EE/Demore, W. B.

**NAGW 582 Columbia University 3732**  
Studies of the effects of winds on the tropical oceans  
*Period* *Obligations*  
03/01/84-03/01/85 FY85: \$80,000 TOTAL: \$160,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Cane, M. A. HQ-EE/Patzert, W. C. 33-Oceanography  
HQ-EE/Wilson, W. S.

**NAGW 588 Columbia University 3733**  
Solar flare X-ray polarimetry  
*Period* *Obligations*  
04/01/84-03/31/86 FY85: \$25,000 TOTAL: \$25,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Chanan, G. A. HQ-EZ/Gergely, T. E. 13-Physics

**NAGW 667 Columbia University 3734**  
The effects of wind and water chemistry on gas exchange in the great basin lakes  
*Period* *Obligations*  
11/01/84-10/31/85 FY85: \$38,071 TOTAL: \$38,071  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Broecker, W. S. HQ-EE/Hampson, R. F. 32-Geological Sci  
HQ-EE/Demore, W. B.

**NAGW 704 Columbia University 3735**  
Influence of climate change on rates of deep sea ventilation  
*Period* *Obligations*  
01/01/85-12/31/85 FY85: \$64,240 TOTAL: \$64,240  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Broecker, W. S. HQ-EE/Hampson, R. F. 33-Oceanography  
HQ-EE/Demore, W. B.

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**NAS 5-27237 Columbia University 3736**  
A plan for VLBI measurements in Alaska to determine plate convergence  
*Period* *Obligations*  
08/06/82-01/05/86 FY85: TOTAL: \$87,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Johnson, T. L. GSFC/Mead, G. D. 32-Geological Sci  
Beavan, J.  
Bilham, R.

**NAS 5-27239 Columbia University 3737**  
Research investigation entitled 'SAFE II'  
*Period* *Obligations*  
08/10/82-02/08/85 FY85: TOTAL: \$50,584  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Scholz, C. H. GSFC/Mead, G. D. 32-Geological Sci

**NAS 5-29138 Columbia University 3738**  
Research and design of orthogonal modulation codes  
*Period* *Obligations*  
05/01/85-04/30/86 FY85: \$87,000 TOTAL: \$87,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Prucnal, P. GSFC/Lopez, H. 45-Elec Engr

**NAS 5-29172 Columbia University 3739**  
Cooperative visitors program  
*Period* *Obligations*  
05/10/85-05/10/86 FY85: \$84,447 TOTAL: \$84,447  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Levenson, R. GSFC/Travis, L. 19-Phys Sci, NEC

**NAS 8-30753 Columbia University 3740**  
Design, development and operation of the HEAO mission B X-ray telescope experiment  
*Period* *Obligations*  
06/01/74-09/30/85 FY85: \$4,139 TOTAL: \$1,844,876  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Agrawala, A. K. MSFC/Stone, J. F. 11-Astronomy  
Tripathi, S. K.

**NAS 8-34713 Columbia University 3741**  
Scientific support in the development, integration mission support and data analysis of the tribology experiment in zero gravity (TEZG)  
*Period* *Obligations*  
07/01/82-07/31/85 FY85: \$3,799 TOTAL: \$101,047  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pan, C. H. MSFC/Jones, C. T., III 19-Phys Sci, NEC

**NAS13-243 Columbia University 3742**  
Seminar on global habitability  
*Period* *Obligations*  
03/02/84-09/30/84 FY85: TOTAL: \$8,994  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Levenson, R. A. NSTL/Mooneyhan, D. W. 39-Env Sci, NEC

**NAS13-260 Columbia University 3743**  
Series of global habitability seminars  
*Period* *Obligations*  
09/18/84-12/31/85 FY85: \$27,170 TOTAL: \$85,627  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Unavailable NSTL/Estess, R. S. 32-Geological Sci

**NCA 2-172102 Columbia University 3744**  
Biotelemetric analysis of pediatric long-bone reconstruction  
*Period* *Obligations*  
05/15/81-05/31/86 FY85: TOTAL: \$32,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pawluk, R. J. ARC/Young, D. R. 56-Medical Sciences  
Dick, H. M.

**NCC 1-5 Columbia University 3745**  
The influence of auditory inputs on simulated flight operations  
*Period* *Obligations*  
04/15/79-06/30/85 FY85: TOTAL: \$215,041  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Galanter, E. LARC/Harris, R. L., Sr. 41-Aero Engr  
LARC/Spady, A. A.

**NCC 1-59 Columbia University 3746**  
Development of mesh generation software system with interactive computer graphics  
*Period* *Obligations*  
12/01/81-11/30/83 FY85: TOTAL: \$55,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Eiseman, P. R. LARC/Smith, R. E. 29-Math/Computer, NEC  
Chu, C. K. LARC/Shoosmith, J. N.

**NCC 2-325 Columbia University 3747**  
Intercellular communication and intracellular metabolic responses by bone cells to simulated weightlessness  
*Period* *Obligations*  
11/01/84-10/31/85 FY85: \$60,000 TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Doty, S. B. ARC/Holton, E. M. 51-Biological Sci

**NCC 5-16 Columbia University 3748**  
Multidisciplinary research in space science  
*Period* *Obligations*  
05/15/79-12/31/83 FY85: \$15,873 TOTAL: \$2,406,784  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Broecker, W. S. GSFC/Travis, L. 31-Atmos Sci  
Flynn, G. W. GSFC/Kerr, A. R.

**NCC 5-28 Columbia University 3749**  
Molecular astrophysics and high frequency detector development  
*Period* *Obligations*  
09/01/83-08/31/86 FY85: \$255,650 TOTAL: \$650,888  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Osgood, R. M. GSFC/Green, S. 19-Phys Sci, NEC



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**NCC 5-29 Columbia University 3750**  
Atmospheric, climatic and environmental research  
*Period Obligations*  
10/01/83-09/30/85 FY85: \$557,878 TOTAL: \$1,141,502  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Broecker, W. S. GSFC/Travis, L. 31-Atmos Sci  
Fung, I.

**NCC 5-32 Columbia University 3751**  
Ground hydrology model suitable for global climate modeling  
*Period Obligations*  
07/01/84-06/30/86 FY85: \$66,938 TOTAL: \$66,938  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Zobler, L. GSFC/Travis, L. 39-Env Sci, NEC

**NGR 33-008-102 Columbia University 3752**  
Research in X-ray astronomy  
*Period Obligations*  
01/30/68-10/31/84 FY85: TOTAL: \$3,004,942  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Novick, R. GSFC/Early, L. J. 11-Astronomy  
Ku, W. H.  
Long, K. S.

**NSG 1450 Columbia University 3753**  
Aircraft cabin noise, prediction and optimization  
*Period Obligations*  
09/06/77-06/30/85 FY85: TOTAL: \$432,506  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Vaicaitis, R. LARC/Mixson, J. S. 41-Aero Engr  
LARC/Stephens, D. G.

**NSG 7105 Columbia University 3754**  
Calculation of collision cross sections of astrophysical interest  
*Period Obligations*  
12/01/74-11/30/85 FY85: \$26,000 TOTAL: \$387,928  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Flynn, G. HQ-EZ/Stencel, R. E. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NAG 1-18 Cooper Union College 3755**  
A comprehensive model to determine the effects of temperature and species fluctuations on reaction rates in turbulent reacting flows  
*Period Obligations*  
02/01/79-01/31/86 FY85: \$23,477 TOTAL: \$186,560  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Chinitz, W. C. LARC/Drummond, J. P. 21-Mathematics  
LARC/Rogers, R. C.

**NAG 1-376 Cornell University 3756**  
Helicopter tail rotor noise  
*Period Obligations*  
07/01/83-09/30/84 FY85: TOTAL: \$44,583  
*Prin. Invest. NASA Tech. Officer CASE Category*  
George, A. R. LARC/Farassat, F. 41-Aero Engr  
LARC/Brooks, T. F.

**NAG 1-590 Cornell University 3757**  
Helicopter tail rotor noise analyses  
*Period Obligations*  
06/01/85-01/31/86 FY85: \$11,999 TOTAL: \$11,999  
*Prin. Invest. NASA Tech. Officer CASE Category*  
George, A. R. LARC/Farassat, F. 41-Aero Engr

**NAG 2-13 Cornell University 3758**  
Analysis of transonic flow past helicopter rotors  
*Period Obligations*  
01/01/80-12/31/84 FY85: TOTAL: \$68,840  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Caughey, D. A. ARC/Tauber, M. E. 41-Aero Engr

**NAG 2-158 Cornell University 3759**  
Ultrapressure materials science  
*Period Obligations*  
01/01/82-06/30/84 FY85: TOTAL: \$150,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ruoff, A. L. ARC/Nelson, H. G. 47-Materials Engr

**NAG 2-207 Cornell University 3760**  
Medium and high resolution infrared spectroscopy from the G. P. Kuiper Airborne Observatory  
*Period Obligations*  
11/01/82-10/31/85 FY85: \$150,000 TOTAL: \$439,300  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Houck, J. R. ARC/Haughney, L. C. 11-Astronomy  
Herter, T. L.

**NAG 2-218 Cornell University 3761**  
Rotational transonic flow past helicopter rotors  
*Period Obligations*  
02/01/83-01/31/86 FY85: \$37,000 TOTAL: \$94,330  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Caughey, D. A. ARC/Tauber, M. E. 41-Aero Engr

**NAG 2-291 Cornell University 3762**  
Forefronts of large scale computational problems  
*Period Obligations*  
03/01/84-02/28/85 FY85: TOTAL: \$5,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wilson, K. G. ARC/Bailey, F. R. 22-Computer Science

**NAG 2-317 Cornell University 3763**  
The infrared spectrometer during the SIRTf predefinition phase  
*Period Obligations*  
07/01/84-10/31/85 FY85: \$480,190 TOTAL: \$480,190  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Houck, J. R. ARC/Ramos, R. 11-Astronomy  
ARC/Leidich, C. A.

**NAG 3-19 Cornell University 3764**  
Analysis of rotational, transonic flows in turbomachinery  
*Period Obligations*  
01/01/80-10/30/84 FY85: TOTAL: \$270,280  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Caughey, D. A. LERC/Swissheim, J. M. 41-Aero Engr  
LERC/Adamczyk, J. J.

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**NAG 3-45** **Cornell University** **3765**  
Multigrid calculation of 3-D turbomachinery flows  
*Period* *Obligations*  
09/01/85-08/31/86 FY85: TOTAL: \$175,357  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Caughy, D. A. LERC/Chima, R. V. 41-Aero Engr  
LERC/Sockol, P. M.

**NAG 3-349** **Cornell University** **3766**  
Stall recovery research  
*Period* *Obligations*  
11/15/82-10/20/85 FY85: \$79,410 TOTAL: \$207,220  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Moore, F. K. LERC/Newman, F. A. 41-Aero Engr

**NAG 3-395** **Cornell University** **3767**  
Interactive graphical color display of three dimensional seal-flow behavior  
*Period* *Obligations*  
03/01/83-10/31/85 FY85: \$15,150 TOTAL: \$83,080  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Abel, J. F. LERC/Tang, H. M. 46-Mech Engr  
Greenberg, D. P. LERC/Kascak, A. F.  
Ingraffea, A. R.

**NAG 3-619** **Cornell University** **3768**  
Indium phosphide mis logic devices  
*Period* *Obligations*  
05/15/85-05/16/86 FY85: \$50,000 TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Frey, J. LERC/Downey, A. N. 45-Elec Engr

**NAG 3-632** **Cornell University** **3769**  
Properties of modulation doped heterojunction for high frequency devices  
*Period* *Obligations*  
04/05/85-12/05/85 FY85: \$60,000 TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Eastman, L. F. LERC/Alterovitz, S. A. 45-Elec Engr  
Wicks, G. W.

**NAG 3-645** **Cornell University** **3770**  
Multistage calculation of 3-D turbomachinery flows  
*Period* *Obligations*  
06/27/85-08/31/86 FY85: \$60,919 TOTAL: \$60,919  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Caughay, D. A. LERC/Chima, R. V. 41-Aero Engr

**NAG 5-319** **Cornell University** **3771**  
Mechanisms of crustal deformation in the western United States  
*Period* *Obligations*  
05/15/83-07/31/86 FY85: \$24,625 TOTAL: \$67,742  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Turcott, D. GSFC/Welker, J. E. 32-Geological Sci

**NAG 5-403** **Cornell University** **3772**  
To design parallel algorithms and programming tools for processing on the massively parallel processor  
*Period* *Obligations*  
06/01/84-11/30/85 FY85: TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Reeves, A. P. GSFC/Strong, J. P. 45-Elec Engr  
GSFC/Ramapriyan, H. K.

**NAG 5-601** **Cornell University** **3773**  
Interferometric phase velocity measurements of plasma waves in the Earth's ionosphere  
*Period* *Obligations*  
02/01/82-02/28/86 FY85: \$125,065 TOTAL: \$322,344  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kintner, P. M. GSFC/Early, L. J. 13-Physics  
Kelley, M. C. GSFC/Pless, R. H.

**NAG 8-471** **Cornell University** **3774**  
The density of the intracluster medium in the vicinity of galaxies with measured neutral hydrogen deficiency  
*Period* *Obligations*  
05/15/84-11/15/85 FY85: TOTAL: \$17,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Haynes, M. P. MSFC/Johnson, W. G. 11-Astronomy

**NAGW 3** **Cornell University** **3775**  
The amyloplast as a gravity sensing device in plants  
*Period* *Obligations*  
10/01/79-03/31/86 FY85: \$50,000 TOTAL: \$286,170  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Leopold, A. C. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAGW 90** **Cornell University** **3776**  
Theoretical studies of plasma convection and magnetic field reconnection in the Sun and in the Earth's magnetosphere  
*Period* *Obligations*  
06/01/80-05/31/84 FY85: TOTAL: \$482,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Sudan, R. N. HQ-EE/Butler, D. M. 13-Physics  
HQ-EE/Birmingham, T. J.

**NAGW 111** **Cornell University** **3777**  
A study of particle size sorting in Martian wind streaks  
*Period* *Obligations*  
11/01/80-10/31/85 FY85: \$40,937 TOTAL: \$153,307  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Thomas, P. C. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NAGW 116** **Cornell University** **3778**  
Radar investigation of asteroids  
*Period* *Obligations*  
11/01/80-06/31/85 FY85: TOTAL: \$114,655  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ostro, S. J. HQ-EL/Brinton, H. C. 11-Astronomy  
HQ-EL/Hillman, J. J.

# **NASA'S UNIVERSITY PROGRAM NEW YORK (Continued)**

**NAGW 310**  
Studies of planetary rings  
Period  
04/01/82-12/31/85  
Prin. Invest.  
Burns, J. A.

**Cornell University**

Obligations  
FY85: \$97,000  
NASA Tech. Officer  
HQ-EL/Boyce, J. M.  
HQ-EL/Holt, H. E.  
TOTAL: \$271,400  
CASE Category  
32-Geological Sci

**3779**

**NAGW 576**  
Imaging and inflated pare hydrogen study on the outer planet  
Period  
07/01/84-06/30/86  
Prin. Invest.  
Gierasch, P. J.

**Cornell University**

Obligations  
FY85: \$88,618  
NASA Tech. Officer  
HQ-EL/Brinton, H. C.  
HQ-EL/Quaide, W. L.  
TOTAL: \$88,618  
CASE Category  
31-Atmos Sci

**3786**

**NAGW 362**

Stratospheric dynamics--observational studies  
Period  
06/01/82-05/31/85  
Prin. Invest.  
Farley, D. T.

**Cornell University**

Obligations  
FY85:  
NASA Tech. Officer  
HQ-EE/Chandra, S.  
HQ-EE/Kakar, R. K.  
TOTAL: \$182,985  
CASE Category  
31-Atmos Sci

**3780**

**NAGW 647**

A space plasma physics program in conjunction with the plasma diagnostics package  
Period  
06/01/84-11/30/85  
Prin. Invest.  
Kelley, M. C.

**Cornell University**

Obligations  
FY85:  
NASA Tech. Officer  
HQ-EE/Lynch, J. T.  
HQ-EE/Shawhan, S. D.  
TOTAL: \$20,000  
CASE Category  
13-Physics

**3787**

**NAGW 392**

Dynamics of co-orbital satellites and asteroids  
Period  
11/01/82-01/31/86  
Prin. Invest.  
Dermott, S. F.

**Cornell University**

Obligations  
FY85: \$78,000  
NASA Tech. Officer  
HQ-EL/Boyce, J. M.  
HQ-EL/Holt, H. E.  
TOTAL: \$260,614  
CASE Category  
32-Geological Sci

**3781**

**NAGW 666**

Theoretical physics of accreting, magnetized neutron stars and the resulting X-ray emission  
Period  
11/01/84-10/31/85  
Prin. Invest.  
Salpeter, E. E.

**Cornell University**

Obligations  
FY85: \$39,095  
NASA Tech. Officer  
HQ-EZ/Kaluziński, L. J.  
HQ-EZ/Ormes, J. F.  
TOTAL: \$39,095  
CASE Category  
11-Astronomy

**3788**

**NAGW 493**

Template reactions and chemical evolution  
Period  
07/01/83-09/30/85  
Prin. Invest.  
Usher, D. A.

**Cornell University**

Obligations  
FY85: \$72,458  
NASA Tech. Officer  
HQ-EB/Devincenzi, D. L.  
HQ-EB/Rambler, M.  
TOTAL: \$157,016  
CASE Category  
12-Chemistry

**3782**

**NAGW 761**

Mission scientist on the European Space Agency's infrared space observatory  
Period  
07/01/85-06/30/86  
Prin. Invest.  
Harwit, M.

**Cornell University**

Obligations  
FY85: \$27,000  
NASA Tech. Officer  
HQ-EZ/Boggess, N. W.  
HQ-EZ/Weiler, E. J.  
TOTAL: \$27,000  
CASE Category  
99-Multi-Discip

**3789**

**NAGW 521**

Publication of a book natural satellites  
Period  
12/01/83-11/30/85  
Prin. Invest.  
Burns, J. A.

**Cornell University**

Obligations  
FY85:  
NASA Tech. Officer  
HQ-EL/Brinton, H. C.  
HQ-EL/Hillman, T. J.  
TOTAL: \$14,900  
CASE Category  
11-Astronomy

**3783**

**NAGW 797**

Implications of convection within the Moon and the terrestrial planets  
Period  
08/01/85-07/31/86  
Prin. Invest.  
Turcotte, D. L.

**Cornell University**

Obligations  
FY85: \$26,846  
NASA Tech. Officer  
HQ-EL/Scott, D. H.  
HQ-EL/Boyce, J. M.  
TOTAL: \$26,846  
CASE Category  
32-Geological Sci

**3790**

**NAGW 543**

Asteroid lightcurve inversion  
Period  
02/15/84-02/14/85  
Prin. Invest.  
Ostro, S. J.

**Cornell University**

Obligations  
FY85:  
NASA Tech. Officer  
HQ-EL/Boyce, J. M.  
HQ-EL/Holt, H. E.  
TOTAL: \$29,672  
CASE Category  
32-Geological Sci

**3784**

**NAS 5-23236**

Feasibility study for infrared interferometer, spectrometer, and radiometer for Mariner/Jupiter 1977 launch  
Period  
05/01/73-09/30/86  
Prin. Invest.  
Gierasch, P. J.

**Cornell University**

Obligations  
FY85:  
NASA Tech. Officer  
GSFC/Conrath, B. J.  
TOTAL: \$186,000  
CASE Category  
13-Physics

**3791**

**NAGW 544**

Dynamical studies of Saturn's rings  
Period  
03/01/84-02/28/86  
Prin. Invest.  
Nicholson, P. D.

**Cornell University**

Obligations  
FY85: \$28,151  
NASA Tech. Officer  
HQ-EL/Boyce, J. M.  
HQ-EL/Holt, H. E.  
TOTAL: \$53,445  
CASE Category  
32-Geological Sci

**3785**

**NAS 5-27232**

Space based measurements of crustal deformation in the U.S.  
Period  
07/15/82-01/14/86  
Prin. Invest.  
Oliver, J.  
Brown, L. D.

**Cornell University**

Obligations  
FY85: \$49,915  
NASA Tech. Officer  
GSFC/Mead, G. D.  
TOTAL: \$120,000  
CASE Category  
32-Geological Sci

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**NAS 5-27340**  
**Cornell University**  
 Correlation of data on strain accumulation adjacent to the San Andreas Fault with available models  
 Period: 09/09/82-10/14/86  
 Prin. Invest. Turcotte, D. L.  
 Obligations: FY85: \$26,000  
 NASA Tech. Officer: GSFC/Mead, G. D.  
 TOTAL: \$73,983  
 CASE Category: 32-Geological Sci  
**3793**

**NGL 33-010-186**  
**Cornell University**  
 Studies of thermal structure and motion of planetary atmospheres  
 Period: 04/18/73-06/14/86  
 Prin. Invest. Gierasch, P. J.  
 Obligations: FY85: \$70,000  
 NASA Tech. Officer: HQ-EL/Brinton, H. C.  
 HQ-EL/Quaide, W. L.  
 TOTAL: \$658,443  
 CASE Category: 31-Atmos Sci  
**3800**

**NAS 5-28739**  
**Cornell University**  
 Thematic mapper study of Alaska ophiolites  
 Period: 07/26/85-11/26/88  
 Prin. Invest. Bird, J. M.  
 Obligations: FY85: \$215,281  
 NASA Tech. Officer: GSFC/Oseroff, H.  
 TOTAL: \$215,281  
 CASE Category: 32-Geological Sci  
**3794**

**NGR 33-010-101**  
**Cornell University**  
 An integrated program in exobiology and problems related to origin of life  
 Period: 10/09/69-09/30/85  
 Prin. Invest. Sagan, C. E.  
 Khare, B. N.  
 Obligations: FY85: \$130,000  
 NASA Tech. Officer: HQ-EB/Devincenzi, D. L.  
 HQ-EB/Rambler, M. B.  
 TOTAL: \$1,459,445  
 CASE Category: 12-Chemistry  
**3801**

**NAS 5-28767**  
**Cornell University**  
 Mountain building processes in the central Andes part I  
 Period: 08/14/85-12/13/88  
 Prin. Invest. Bloom, A. L.  
 Isacks, B. L.  
 Obligations: FY85: \$406,989  
 NASA Tech. Officer: GSFC/Oseroff, H.  
 GSFC/Stuart, L. M.  
 TOTAL: \$406,989  
 CASE Category: 32-Geological Sci  
**3795**

**NGR 33-010-108**  
**Cornell University**  
 Implications of convection within the Moon  
 Period: 05/18/70-01/31/85  
 Prin. Invest. Turcotte, D. L.  
 Obligations: FY85: \$341,563  
 NASA Tech. Officer: HQ-EL/Boyce, J. M.  
 HQ-EL/Holt, H. E.  
 TOTAL: \$341,563  
 CASE Category: 32-Geological Sci  
**3802**

**NAS 8-36687**  
**Cornell University**  
 Development integrated chemical release mission plan  
 Period: 08/30/85-12/31/85  
 Prin. Invest. Kelley, M. C.  
 Obligations: FY85: \$15,000  
 NASA Tech. Officer: MSFC/Hardage, J.  
 TOTAL: \$15,000  
 CASE Category: 19-Phys Sci, NEC  
**3796**

**NGR 33-010-161**  
**Cornell University**  
 Studies of the magnetospheres of Earth and Jupiter  
 Period: 01/18/72-01/31/85  
 Prin. Invest. Farley, D. T.  
 Obligations: FY85: \$693,740  
 NASA Tech. Officer: HQ-EE/Lynch, J. T.  
 HQ-EE/Shawhan, S. D.  
 TOTAL: \$693,740  
 CASE Category: 11-Astronomy  
**3803**

**NASW 3342**  
**Cornell University**  
 Set up a computer system for the spacecraft planetary imaging facility at Cornell  
 Period: 10/01/79-10/31/85  
 Prin. Invest. Veverka, J.  
 Obligations: FY85: \$48,148  
 NASA Tech. Officer: HQ-EL/Boyce, J. M.  
 HQ-EL/Holt, H. E.  
 TOTAL: \$304,794  
 CASE Category: 32-Geological Sci  
**3797**

**NGR 33-010-220**  
**Cornell University**  
 Interdisciplinary investigations of Mariner 9 data  
 Period: 12/05/73-11/15/85  
 Prin. Invest. Sagan, C. E.  
 Obligations: FY85: \$82,000  
 NASA Tech. Officer: HQ-EL/Boyce, J. M.  
 HQ-EL/Holt, H. E.  
 TOTAL: \$676,201  
 CASE Category: 32-Geological Sci  
**3804**

**NCA 2-175301**  
**Cornell University**  
 Compensation and saturation points of higher plants for CELSS  
 Period: 06/15/83-06/14/84  
 Prin. Invest. Langhans, R. W.  
 Obligations: FY85: \$12,683  
 NASA Tech. Officer: ARC/MacElroy, R. D.  
 TOTAL: \$12,683  
 CASE Category: 51-Biological Sci  
**3798**

**NGT 33-010-800**  
**Cornell University**  
 NASA graduate student researchers program  
 Period: 06/01/83-05/31/86  
 Prin. Invest. Philpot, W. D.  
 Obligations: FY85: \$16,040  
 NASA Tech. Officer: HQ-LB/Owens, F. C.  
 TOTAL: \$44,195  
 CASE Category: 49-Engr, NEC  
**3805**

**L 33-010-082**  
**Cornell University**  
 The study of lunar and planetary surfaces and atmospheres  
 Period: 09/23/68-12/31/85  
 Prin. Invest. Sagan, C. E.  
 Obligations: FY85: \$60,284  
 NASA Tech. Officer: HQ-EL/Brinton, H. C.  
 HQ-EL/Quaide, W. L.  
 TOTAL: \$1,046,292  
 CASE Category: 31-Atmos Sci  
**3799**

**NGT 33-010-802**  
**Cornell University**  
 NASA graduate student researchers program  
 Period: 06/01/85-05/31/86  
 Prin. Invest. Kelley, M. C.  
 Obligations: FY85: \$18,000  
 NASA Tech. Officer: HQ-LE/Owens, F. C.  
 TOTAL: \$18,000  
 CASE Category: 45-Elec Engr  
**3806**

**NASA'S UNIVERSITY PROGRAM  
NEW YORK (Continued)**

**NGT 33-010-803 Cornell University 3807**  
NASA graduate student researchers program  
*Period Obligations*  
06/01/85-05/31/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Turcotte, D. L. HQ-LE/Owens, F. C. 32-Geological Sci

**NGT 33-010-804 Cornell University 3808**  
NASA graduate student researchers program  
*Period Obligations*  
08/20/85-08/19/86 FY85: \$17,960 TOTAL: \$17,960  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Nicholson, P. D. HQ-LE/Owens, F. C. 11-Astronomy

**NSG 2347 Cornell University 3809**  
Far infrared spectral line observations from the G. P. Kuiper Airborne Observatory  
*Period Obligations*  
10/01/78-10/31/86 FY85: \$145,000 TOTAL: \$868,427  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Harwit, M. O. ARC/Haughney, L. C. 11-Astronomy

**NSG 2408 Cornell University 3810**  
Aerobic biological waste treatment for closed ecological life support systems  
*Period Obligations*  
09/15/79-06/30/85 FY85: TOTAL: \$279,960  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Shuler, M. L. ARC/Wydeven, T. 43-Chem Engr

**NSG 2412 Cornell University 3811**  
Molecular spectroscopy from the Kuiper Airborne Observatory  
*Period Obligations*  
10/01/79-12/31/84 FY85: TOTAL: \$365,566  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Beckwith, S. ARC/Haughney, L. C. 11-Astronomy

**NSG 6020 Cornell University 3812**  
Rocket investigation of neutral atmosphere ionosphere coupling and planetary electrodynamics  
*Period Obligations*  
03/01/78-10/31/85 FY85: \$350,000 TOTAL: \$1,015,117  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kelley, M. C. GSFC/Early, L. J. 19-Phys Sci, NEC  
Farley, D. T. GSFC/Pless, R. H.

**NSG 7156 Cornell University 3813**  
Physical studies of planetary surfaces  
*Period Obligations*  
07/01/75-09/30/85 FY85: \$52,497 TOTAL: \$433,364  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Veverka, J. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NSG 7606 Cornell University 3814**  
Effects of photometric geometry on spectral reflectance measurements  
*Period Obligations*  
05/01/79-06/30/86 FY85: \$64,835 TOTAL: \$383,495  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Veverka, J. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NSG 7612 Cornell University 3815**  
Participation in the Mars data analysis program: Analysis of cloud forms in Viking and Mariner 9 images  
*Period Obligations*  
04/01/79-09/31/85 FY85: TOTAL: \$301,070  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Gierasch, P. J. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W. E.

**NCC 2-253 Cornell University - Medical Center 3816**  
Effectiveness of circadian countermeasures in simulated trans-meridian flight schedules  
*Period Obligations*  
07/01/83-12/31/85 FY85: \$103,383 TOTAL: \$259,108  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Monk, T. H. ARC/Lauber, J. K. 56-Medical Sciences  
ARC/Nagel, D. C.

**NAG 1-311 Hofstra University 3817**  
Estimation of scattering characteristics using FM-CW radar with direct autocorrelation techniques structures  
*Period Obligations*  
11/24/82-01/31/86 FY85: \$32,531 TOTAL: \$73,390  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Weissman, D. E. LARC/Staton, L. D. 45-Elec Engr  
LARC/Beck, F. B.

**NAGW 468 Hofstra University 3818**  
Radar measurements of ocean surface waves using the aircraft two frequency scatterometer  
*Period Obligations*  
05/01/83-01/31/86 FY85: \$51,549 TOTAL: \$124,605  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Weissman, D. E. HQ-EE/Patzert, W. C. 33-Oceanography  
HQ-EE/Wilson, W. S.

**NAG 5-273 Hunter College 3819**  
Reflectance modeling  
*Period Obligations*  
09/01/82-09/30/85 FY85: TOTAL: \$199,829  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Strahler, A. H. GSFC/Kimes, D. S. 55-Agriculture Sci

**NAGW 735 Hunter College 3820**  
Center of expertise in spatial modeling and its application to remote sensing  
*Period Obligations*  
03/01/85-02/28/86 FY85: \$69,999 TOTAL: \$69,999  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Strahler, A. H. HQ-EE/Tuyahov, A. J. 39-Env Sci, NEC

# **NASA'S UNIVERSITY PROGRAM** **NEW YORK (Continued)**

**NCA 2-305401**                      **Hunter College**                      **3821**  
Algorithm development for efficient interrogation of a distributed  
land data pilot information system  
*Period*                      *Obligations*  
01/01/84-04/30/85                      FY85:                      TOTAL: \$14,985  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Strahler, A. H.                      ARC/Norman, S. D.  
Robinson, V. B.                      ARC/Bauer, E. H. 22-Computer Science  
Clarke, K. C.

**NAG 2-336**                      **Mt Sinai Sch of Med of The Cuny**                      **3822**  
Optokinetic activation of vertical vestibular neurons  
*Period*                      *Obligations*  
12/01/84-11/30/85                      FY85: \$54,000                      TOTAL: \$54,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Cohen, B.                      ARC/Daunton, N. G. 51-Biological Sci  
ARC/Corcoran, M. L.

**NGT 33-230-830**                      **New York Institute of Technology**                      **3823**  
Purpose of conducting early-start engineering careers for  
minorities and women  
*Period*                      *Obligations*  
07/01/83-09/30/86                      FY85:                      TOTAL: \$200,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Williams, T.                      HQ-U/Pohly, J. G. 29-Math/Computer, NEC

**NAG 1-314**                      **New York University**                      **3824**  
Studies of active flow control  
*Period*                      *Obligations*  
11/18/82-11/17/84                      FY85:                      TOTAL: \$21,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Ting, L.                      LARC/Maestrello, L. 41-Aero Engr

**NAG 1-457**                      **New York University**                      **3825**  
Adaptive methods for transonic flow  
*Period*                      *Obligations*  
03/15/84-03/14/86                      FY85: \$17,423                      TOTAL: \$32,423  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Berger, M. J.                      LARC/Thames, F. C. 41-Aero Engr  
LARC/South, J. C., Jr.

**NAG 2-345**                      **New York University**                      **3826**  
Computational methods for the problem of the tip vortex  
*Period*                      *Obligations*  
04/01/85-03/31/86                      FY85: \$45,000                      TOTAL: \$45,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Garabedian, P. R.                      ARC/Chang, I. C. 41-Aero Engr

**NAG 5-73**                      **New York University**                      **3827**  
Multifrequency observations of selected extragalactic sources  
*Period*                      *Obligations*  
06/01/80-12/31/85                      FY85: \$29,600                      TOTAL: \$141,200  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Glassgold, A. E.                      GSFC/Kondo, Y. 11-Astronomy  
Bregman, J. N.  
Huggins, P. J.

**NAG 5-341**                      **New York University**                      **3828**  
Computational methods for general circulation models numerical  
methods for data assimilation and initialization  
*Period*                      *Obligations*  
07/01/83-05/31/86                      FY85: \$110,000                      TOTAL: \$268,500  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Isaacson, E.                      GSFC/Kalnay, E. 31-Atmos Sci  
Stoker, J. J.

**NAG 5-503**                      **New York University**                      **3829**  
Application of solar max acrim data to analyze the solar driven  
climatic variability on Earth  
*Period*                      *Obligations*  
02/01/85-01/31/86                      FY85: \$39,998                      TOTAL: \$39,998  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Hoffert, M. I.                      GSFC/Bullock, G. D. 13-Physics

**NAG 8-449**                      **New York University**                      **3830**  
Galactic X-ray emission from coronae and winds  
*Period*                      *Obligations*  
03/07/83-11/30/85                      FY85:                      TOTAL: \$29,313  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Bregman, J. N.                      MSFC/Johnson, W. G. 11-Astronomy

**NAGW 573**                      **New York University**                      **3831**  
The Martian climate energy balance models with CO2/H2O  
atmospheres  
*Period*                      *Obligations*  
03/01/84-02/28/86                      FY85: \$49,776                      TOTAL: \$99,742  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Hoffert, M. I.                      HQ-EL/Brinton, H. C. 32-Geological Sci  
HQ-EL/Brunk, W. E.

**NAGW 630**                      **New York University**                      **3832**  
Physical properties of molecular clouds  
*Period*                      *Obligations*  
06/01/84-05/31/86                      FY85: \$50,499                      TOTAL: \$98,499  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Glassgold, A. E.                      HQ-EZ/Stencel, R. E. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NAGW 781**                      **New York University**                      **3833**  
Solar terrestrial physics research  
*Period*                      *Obligations*  
07/01/85-01/31/86                      FY85: \$70,000                      TOTAL: \$70,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Strauss, H.                      HQ-EE/Butler, D. M. 11-Astronomy  
GSFC/Birmingham, T. J.

**NCA 2-525301**                      **New York University**                      **3834**  
Dimensionally-split methods for the solution of 2D flows with  
discontinuities  
*Period*                      *Obligations*  
06/15/83-11/01/83                      FY85:                      TOTAL: \$16,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Harten, A.                      ARC/Warming, R. F. 21-Mathematics  
ARC/Yee, H.

**NASA'S UNIVERSITY PROGRAM  
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**NCC 1-58 New York University 3835**  
Analysis of vortex wake structure  
*Period Obligations*  
11/03/81-11/02/85 FY85: \$60,000 TOTAL: \$181,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ting, L. LARC/Liu, C. H. 41-Aero Engr

**NGT 33-016-800 New York University 3836**  
Graduate student training program in computational fluid dynamics  
*Period Obligations*  
07/01/80-09/30/84 FY85: TOTAL: \$380,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Garabedian, P. R. HQ-RT/Graves, R. A., Jr. 41-Aero Engr

**NSG 1579 New York University 3837**  
Computational fluid dynamics on the star  
*Period Obligations*  
12/01/78-05/31/86 FY85: \$50,000 TOTAL: \$675,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Garabedian, P. R. LARC/Salas, M. D. 21-Mathematics  
LARC/Keller, J. D.

**NSG 5130 New York University 3838**  
Short term numerical weather prediction and very long term climate modelling  
*Period Obligations*  
10/01/76-10/31/85 FY85: \$45,000 TOTAL: \$614,827  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ghil, M. GSFC/Kalnay, E. 31-Atmos Sci

**NAG 2-229 Polytechnic Institute of New York 3839**  
Impact modification of high temperature polymers  
*Period Obligations*  
02/01/83-12/31/84 FY85: TOTAL: \$221,667  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Pearce, E. M. ARC/Golub, M. A. 12-Chemistry  
Ellis, S. ARC/Cagliostro, D. E.

**NAG 3-616 Polytechnic Institute of New York 3840**  
Mixed oxides of transition elements as oxygen electrode catalysts  
*Period Obligations*  
02/28/85-02/27/86 FY85: \$45,598 TOTAL: \$45,598  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Banks, E. LERC/Singer, J. 19-Phys Sci, NEC  
Schleich, D. M.

**NAG 5-479 Polytechnic Institute of New York 3841**  
Morphological study of waves in the thermosphere using Dynamics Explorer observations  
*Period Obligations*  
10/01/84-12/31/85 FY85: \$27,784 TOTAL: \$27,784  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Gross, S. H. GSFC/Bullock, G. D. 19-Phys Sci, NEC  
GSFC/Hoffman, R. A.

**NAG 5-714 Polytechnic Institute of New York 3842**  
A study of frequency selective reflections and transmission at a layer composed of a periodic dielectric  
*Period Obligations*  
10/01/85-09/30/86 FY85: \$20,117 TOTAL: \$20,117  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Bertoni, H. L. GSFC/Schmitt, R. F. 29-Math/Computer, NEC  
Tamir, T. GSFC/Le Vine, D. M.

**NAGW 284 Polytechnic Institute of New York 3843**  
Study of large scale structures in the topside ionosphere using Alouette 1 and ISIS data  
*Period Obligations*  
02/01/82-04/30/86 FY85: \$45,000 TOTAL: \$165,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Gross, S. H. HQ-EE/Lynch, J. T. 13-Physics  
HQ-EE/Shawhan, S. D.

**NCC 2-172 Polytechnic Institute of New York 3844**  
Geometrical acoustics and transonic helicopter sound  
*Period Obligations*  
02/01/82-11/30/85 FY85: \$24,972 TOTAL: \$120,466  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Isom, M. P. ARC/Yu, Y. H. 41-Aero Engr  
ARC/Schmitz, F. H.

**NGR 33-006-070 Polytechnic Institute of New York 3845**  
Synthesis of polypeptides, sugar phosphates and polynucleotides from intermediates under simulated conditions  
*Period Obligations*  
04/26/73-09/30/85 FY85: \$45,076 TOTAL: \$643,285  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Eirich, F. R. HQ-EB/Devincenzi, D. L. 12-Chemistry  
HQ-EB/Rambler, M.

**NCC 2-108 Queensborough Community College 3846**  
Application of FDM to fiber optic data bussing in real time redundant, distributed computing systems  
*Period Obligations*  
09/01/80-12/31/85 FY85: \$31,938 TOTAL: \$255,404  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Zanger, H. ARC/Webster, L. D. 45-Elec Engr  
Satyanarayana, T.

**NAG 1-171 Rensselaer Polytechnic Institute 3847**  
Parameter estimation of large flexible aerospace structures with application to control of maypole deployable reflector  
*Period Obligations*  
04/01/81-05/15/84 FY85: TOTAL: \$216,418  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Balas, M. J. LARC/Armstrong, E. S. 45-Elec Engr  
LARC/Taylor, L. W., Jr.

**NAG 1-253 Rensselaer Polytechnic Institute 3848**  
Mechanical properties studies pertaining to enhanced toughness matrices for high performance composites  
*Period Obligations*  
02/01/82-12/31/85 FY85: \$91,002 TOTAL: \$267,104  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Sternstein, S. S. LARC/Johnston, N. J. 47-Materials Engr  
LARC/Hinkley, J. A.

**NASA'S UNIVERSITY PROGRAM  
NEW YORK (Continued)**

**NAG 1-330 Rensselaer Polytechnic Institute 3849**  
Optimize the passive shock wave-boundary layer control for  
supercritical airfoil drag reduction  
*Period Obligations*  
03/15/83-12/14/84 FY85: TOTAL: \$59,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Nagamatsu, H. T. LARC/Maestrello, L. 41-Aero Engr

**NAG 3-333 Rensselaer Polytechnic Institute 3856**  
Influence of melt convection on solid liquid interfaces under  
terrestrial and reduced gravity environments  
*Period Obligations*  
10/01/82-11/15/85 FY85: \$200,000 TOTAL: \$592,030  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Glicksman, M. E. LERC/Harf, F. H. 47-Materials Engr  
LERC/Chai, A.

**NAG 1-515 Rensselaer Polytechnic Institute 3850**  
Spacecraft controller synthesis for the NASA IEEF design  
challenge  
*Period Obligations*  
09/01/84-01/31/86 FY85: TOTAL: \$23,870  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kaufman, H. LARC/Joshi, S. M. 45-Elec Engr  
Balas, M. J. LARC/Taylor, L. W.

**NAG 3-544 Rensselaer Polytechnic Institute 3857**  
Minority engineering program  
*Period Obligations*  
04/01/84-03/30/86 FY85: \$70,000 TOTAL: \$140,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Reyes, R. LERC/Aguilar, K. E. 49-Engr, NEC

**NAG 3-199 Rensselaer Polytechnic Institute 3851**  
Tetrahydrofuran-containing polymers as battery separators  
*Period Obligations*  
09/01/81-12/31/84 FY85: TOTAL: \$179,632  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Moore, J. A. LERC/Sheibley, D. W. 12-Chemistry

**NAG 3-604 Rensselaer Polytechnic Institute 3858**  
Diffused junction induction phosphite solar cells  
*Period Obligations*  
02/20/85-02/19/86 FY85: \$70,000 TOTAL: \$70,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ghandhi, S. K. LERC/Weinberg, I. 45-Elec Engr  
Borrego, J. M. LERC/Flood, D.

**NAG 3-205 Rensselaer Polytechnic Institute 3852**  
Emission infrared Fourier microspectro photometric study of fuel  
deposit formation  
*Period Obligations*  
08/15/81-08/13/85 FY85: TOTAL: \$153,255  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Lauer, J. L. GSFC/Seng, G. T. 12-Chemistry

**NAG 5-487 Rensselaer Polytechnic Institute 3859**  
Interactive computer graphics  
*Period Obligations*  
10/15/84-01/31/86 FY85: \$29,850 TOTAL: \$29,850  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wozny, M. J. GSFC/Connell, E. B. 49-Engr, NEC

**NAG 3-213 Rensselaer Polytechnic Institute 3853**  
Characterization of melting and freezing of fuels by thermal  
analysis  
*Period Obligations*  
10/15/81-12/31/84 FY85: TOTAL: \$175,020  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Moynihan, C. T. LERC/Friedman, R. 43-Chem Engr

**NAG 8-28 Rensselaer Polytechnic Institute 3860**  
Super advanced propulsion concept study  
*Period Obligations*  
09/28/84-10/31/85 FY85: \$50,000 TOTAL: \$85,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Myrabo, L. N. MSFC/McCay, T. D. 41-Aero Engr  
MSFC/Aderhold, H.

**NAG 3-222 Rensselaer Polytechnic Institute 3854**  
Rates of bearing surface change under operating conditions by  
non-contact speckle metrology  
*Period Obligations*  
12/15/81-12/12/84 FY85: TOTAL: \$150,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Lauer, J. L. LERC/Jones, W. R., Jr. 46-Mech Engr

**NAGW 476 Rensselaer Polytechnic Institute 3861**  
Investigation of HCN synthesis on Jupiter by photolysis of NH<sub>3</sub>  
*Period Obligations*  
09/01/83-08/31/85 FY85: TOTAL: \$79,625  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ferris, J. P. HQ-EL/Brinton, H. C. 11-Astronomy

**NAG 3-262 Rensselaer Polytechnic Institute 3855**  
Thermoviscoplasticity theory for thermomechanical loading  
*Period Obligations*  
02/25/82-09/30/84 FY85: TOTAL: \$90,912  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Krempf, E. LERC/Thompson, R. L. 41-Aero Engr  
LERC/Johns, R. H.

**NAGW 642 Rensselaer Polytechnic Institute 3862**  
Spectral reflectance properties of meteoritic mineral assemblages  
for the interpretation of asteroid surface materials  
*Period Obligations*  
07/01/84-12/31/85 FY85: \$78,000 TOTAL: \$109,089  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Gaffey, M. J. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.



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**NAS 8-32936 Rensselaer Polytechnic Institute 3863**  
Vapor growth of alloy-type semiconductor crystals experiment

Period	Obligations	
03/20/78-09/15/86	FY85:	TOTAL: \$792,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wiedemier, H.	MSFC/Schaefer, D. A.	47-Materials Engr
Davidson, M. C.	MSFC/Williams, J. R.	
Irene, M.		

**NAS 8-33562 Rensselaer Polytechnic Institute 3864**  
Data analysis and modeling of ultraviolet spectrometer and polarimeter, experiment and other related experiments for Solar Maximum Mission

Period	Obligations	
02/08/80-03/31/85	FY85:	TOTAL: \$254,863
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wiedemeier, H.	MSFC/Schaefer, D. A.	31-Atmos Sci
	MSFC/Zwiener, J. M.	

**NGL 33-018-003 Rensselaer Polytechnic Institute 3865**  
Interdisciplinary materials research fundamental physics and chemistry of materials, environmental effects, and related problems

Period	Obligations	
05/01/84-04/30/86	FY85: \$449,741	TOTAL: \$8,308,085
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Loewy, R. G.	HQ-RT/Greenfield, M. A.	41-Aero Engr
Wiberly, S. E.	HQ-RT/Venneri, S. L.	

**NGR 33-018-148 Rensselaer Polytechnic Institute 3866**  
Photochemical investigations of the atmosphere of other planets

Period	Obligations	
08/27/70-10/31/85	FY85: \$90,771	TOTAL: \$821,350
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ferris, J. P.	HQ-EB/Devincenzi, D. L.	12-Chemistry
	HQ-EB/Rambler, M. B.	

**NAGW 577 Rochester Institute of Technology 3867**  
Radiation transport in dust in disk geometry

Period	Obligations	
04/15/84-04/14/86	FY85:	TOTAL: \$47,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Leung, C. M.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Weiler, E. J.	

**NAS 5-27323 Rochester Institute of Technology 3868**  
Radiometric integrity of LANDSAT-D band 7 data evaluation

Period	Obligations	
09/24/82-10/23/85	FY85: \$19,817	TOTAL: \$139,748
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schott, J. R.	GSFC/Oseroff, H.	49-Engr, NEC
	GSFC/Stuart, L. M.	

**NAG 2-164 Rockefeller University 3869**  
Vestibular system and neural correlates of motion sickness

Period	Obligations	
03/01/82-02/28/86	FY85: \$10,300	TOTAL: \$138,300
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Miller, A. D.	ARC/Daunton, N. G.	51-Biological Sci
Wilson, V. J.	ARC/Corcoran, M. L.	
Schor, R. H.		

**NAGW 321 Rockefeller University 3870**  
Studies of the origin and early evolution of photosynthesis

Period	Obligations	
04/15/82-10/15/85	FY85: \$62,000	TOTAL: \$200,696
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mercer-smith, J. A.	HQ-EB/Devincenzi, D. L.	
Mauzerall, D.	HQ-EB/Rambler, M.	51-Biological Sci

**NSG 2380 Rockefeller University 3871**  
Vestibulocollic reflexes of otolith origin

Period	Obligations	
04/01/79-12/31/85	FY85: \$59,000	TOTAL: \$343,872
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilson, V. J.	ARC/Daunton, N. G.	51-Biological Sci
	ARC/Corcoran, M. L.	

**NAG 1-323 State Univ of New York - Albany 3872**  
Determination of standard chemicals kinetics for Earth-atmosphere flow field calculations

Period	Obligations	
02/01/83-06/30/85	FY85:	TOTAL: \$14,971
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Saturno, A. F.	LARC/Jones, J. J.	12-Chemistry
	LARC/Sutton, K.	

**NAG 1-365 State Univ of New York - Albany 3873**  
NASA workshop on heterogeneous processes in the troposphere

Period	Obligations	
04/20/83-04/19/84	FY85:	TOTAL: \$69,740
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mohnen, V. A.	LARC/Mugler, J. P., Jr.	31-Atmos Sci

**NAG 1-583 State Univ of New York - Albany 3874**  
Measurement of heat and moisture fluxes at the top of the rain forest during Amazon boundary layer experiment (ABLE)

Period	Obligations	
04/16/85-04/15/86	FY85: \$22,238	TOTAL: \$22,238
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fitzjarrald, D. R.	LARC/Ritter, J. A.	31-Atmos Sci
	LARC/Harriss, R. C.	

**NAG 2-230 State Univ of New York - Albany 3875**  
U-2 filter samples

Period	Obligations	
03/15/83-10/31/85	FY85:	TOTAL: \$39,815
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kritz, M. A.	ARC/Snetsinger, K. G.	31-Atmos Sci

**NAG 2-277 State Univ of New York - Albany 3876**  
Use of radon and cosmogenic radionuclides as indicators of exchange between the troposphere and stratosphere

Period	Obligations	
01/01/84-01/31/86	FY85: \$139,693	TOTAL: \$218,465
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kritz, M. A.	ARC/Wilhelmi, A. J.	31-Atmos Sci
	ARC/Russell, P. B.	

**NASA'S UNIVERSITY PROGRAM  
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**NAG 5-333 State Univ of New York - Albany 3877**  
Research of ocean geodynamic cycles  
*Period Obligations*  
07/01/83-05/31/85 FY85: TOTAL: \$40,084  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Burke, K. GSFC/Welker, J. E. 32-Geological Sci

**NAG 9-78 State Univ of New York - Albany 3878**  
Chemistries of lunar and terrestrial glasses  
*Period Obligations*  
02/01/84-02/01/86 FY85: \$30,000 TOTAL: \$60,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Delano, J. W. JSC/Browne, I. D. 32-Geological Sci  
Lindsley, D. H.

**NAG 9-82 State Univ of New York - Albany 3879**  
Petrologic investigations of ureilite meteorites  
*Period Obligations*  
03/01/84-03/01/86 FY85: \$15,000 TOTAL: \$28,850  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Berkley, J. L. JSC/Browne, I. D. 32-Geological Sci

**NAGW 489 State Univ of New York - Albany 3880**  
Synthesis of proterozoic depositional data as a pre-requisite for tectonic and thermal modelling  
*Period Obligations*  
08/01/83-04/30/84 FY85: TOTAL: \$1,797  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Burke, K. HQ-EL/Williams, R. J. 32-Geological Sci  
HQ-EL/French, B. M.

**NAS 8-32893 State Univ of New York - Albany 3881**  
Night-time and daytime orbital survey of lightning and convective phenomena experiment support  
*Period Obligations*  
05/03/78-12/31/85 FY85: TOTAL: \$85,278  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Laza, G. G. MSFC/Keller, V. W. 39-Env Sci, NEC  
MSFC/Anderson, B. J.

**NAS 8-33380 State Univ of New York - Albany 3882**  
Remote observations of severe storms  
*Period Obligations*  
04/30/79-11/15/85 FY85: \$100,000 TOTAL: \$640,059  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Orville, R. E. MSFC/Christian, H. J. 31-Atmos Sci  
MSFC/Vaughan, O. H.

**NAS 8-36178 State Univ of New York - Albany 3883**  
Research study water jet/spray drop measurements  
*Period Obligations*  
09/21/84-11/30/84 FY85: TOTAL: \$24,368  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Lala, G. G. MSFC/Keller, V. W. 31-Atmos Sci  
MSFC/Anderson, B. J.

**NAS 9-16604 State Univ of New York - Albany 3884**  
Establish microbial control in air/water post-treatment beds  
*Period Obligations*  
04/01/82-09/30/86 FY85: TOTAL: \$45,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Janauer, G. E. JSC/Sauer, R. 54-Env Biology

**NCA 2-748301 State Univ of New York - Albany 3885**  
Determination of air mass origin by means of radionuclide measurements  
*Period Obligations*  
04/01/83-08/31/85 FY85: \$1,200 TOTAL: \$44,298  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kritz, M. ARC/Russell, P. 31-Atmos Sci

**NCA 2-748302 State Univ of New York - Albany 3886**  
Evaluation of free troposphere/boundary layer exchange using radionuclide measurements  
*Period Obligations*  
06/01/83-04/15/85 FY85: \$18,308 TOTAL: \$62,908  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kritz, M. ARC/Lawless, J. G. 31-Atmos Sci

**NGT 33-183-803 State Univ of New York - Albany 3887**  
NASA graduate student researchers program  
*Period Obligations*  
06/01/84-05/31/86 FY85: \$18,000 TOTAL: \$31,700  
*Prin. Invest. NASA Tech. Officer CASE Category*  
George, W. HQ-LB/Owens, F. C. 22-Computer Science

**NAG 2-232 State Univ of New York - Binghamton 3888**  
Evaluation of future primate research  
*Period Obligations*  
04/01/83-10/31/84 FY85: TOTAL: \$84,206  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Sulzman, F. M. ARC/Gomersall, E. W. 51-Biological Sci  
ARC/Johnson, R. D.

**NAG 2-361 State Univ of New York - Binghamton 3889**  
Characterization on neurospora circadian rhythms in space  
*Period Obligations*  
07/01/85-12/31/85 FY85: \$29,995 TOTAL: \$29,995  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Sulzman, F. M. ARC/Winget, C. M. 51-Biological Sci

**NAG 5-145 State Univ of New York - Binghamton 3890**  
Effects of the oceans on polar motion  
*Period Obligations*  
03/01/81-06/30/86 FY85: \$40,000 TOTAL: \$182,460  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Dickman, S. R. GSFC/Welker, J. E. 32-Geological Sci

**NAS 2-10621 State Univ of New York - Binghamton 3891**  
Synchronization of primate circadian rhythms in space  
*Period Obligations*  
04/01/80-02/28/85 FY85: TOTAL: \$194,343  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Lawrence, G. M. ARC/Souza, K. A. 51-Biological Sci

**NASA'S UNIVERSITY PROGRAM  
NEW YORK (Continued)**

**NAS 9-15975 State Univ of New York - Binghamton 3892**  
Neurospora experiment

Period	Obligations	
11/09/79-04/01/85	FY85:	TOTAL: \$64,310
Prin. Invest.	NASA Tech. Officer	CASE Category
Sulzman, F. M.	JSC/Nolte, R. W.	51-Biological Sci
Fuller, C. A.		
Moore-ede, M. C.		

**NAG 1-577 State Univ of New York - Buffalo 3899**  
Absorptance, emittance, transmittance and interface effects in multilayered films

Period	Obligations	
04/05/85-04/04/86	FY85: \$24,636	TOTAL: \$24,636
Prin. Invest.	NASA Tech. Officer	CASE Category
Rustgi, M. L.	LARC/Long, S. T.	13-Physics
	LARC/Slemp, W. S.	

**NGT 33-188-801 State Univ of New York - Binghamton 3893**  
NASA graduate student researchers program

Period	Obligations	
06/01/81-05/31/84	FY85:	TOTAL: \$41,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Jensen, R. A.	HQ-LB/Owens, F. C.	51-Biological Sci

**NAG 2-211 State Univ of New York - Buffalo 3900**  
Immobilization/remobilization and the regulation of muscle mass

Period	Obligations	
11/01/82-10/31/85	FY85: \$60,000	TOTAL: \$164,093
Prin. Invest.	NASA Tech. Officer	CASE Category
Almon, R. R.	ARC/Ellis, S.	51-Biological Sci

**NGT 33-188-802 State Univ of New York - Binghamton 3894**  
NASA graduate student researchers program

Period	Obligations	
06/01/82-05/31/85	FY85:	TOTAL: \$43,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Wu, F.	HQ-LB/Owens, F. C.	13-Physics

**NAG 3-469 State Univ of New York - Buffalo 3901**  
Experimental and analytical studies related to gas turbine heat transfer

Period	Obligations	
10/20/83-10/19/84	FY85:	TOTAL: \$96,777
Prin. Invest.	NASA Tech. Officer	CASE Category
Rag, W.	LERC/Povinelli, L.	41-Aero Engr
	LERC/Simoneau, R. J.	

**NGT 33-188-804 State Univ of New York - Binghamton 3895**  
NASA graduate student researchers program

Period	Obligations	
01/01/85-12/31/85	FY85:	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Dickman, S. R.	HQ-LB/Owens, F. C.	32-Geological Sci

**NAG 3-647 State Univ of New York - Buffalo 3902**  
Evolution of periodic disturbances in laminar boundary layers

Period	Obligations	
07/04/85-09/30/85	FY85: \$24,949	TOTAL: \$24,949
Prin. Invest.	NASA Tech. Officer	CASE Category
Taulbee, D. B.	LERC/Goldstein, M. E.	32-Geological Sci

**NGT 33-188-805 State Univ of New York - Binghamton 3896**  
NASA graduate student researchers program

Period	Obligations	
06/01/85-05/31/86	FY85: \$16,611	TOTAL: \$16,611
Prin. Invest.	NASA Tech. Officer	CASE Category
Goel, N. S.	HQ-LE/Owens, F. C.	11-Astronomy

**NAGW 330 State Univ of New York - Buffalo 3903**  
Planetary permafrost

Period	Obligations	
06/01/82-10/31/84	FY85:	TOTAL: \$56,992
Prin. Invest.	NASA Tech. Officer	CASE Category
Anderson, D.	HQ-EL/Boyce, J. M.	32-Geological Sci

**NAG 1-249 State Univ of New York - Buffalo 3897**  
Debugging tools and multipoint nodes for a distributed environment

Period	Obligations	
01/19/82-11/18/85	FY85: \$75,000	TOTAL: \$294,783
Prin. Invest.	NASA Tech. Officer	CASE Category
Wittie, L. D.	LARC/Murray, N. D.	
	LARC/Will, R. W.	22-Computer Science

**NAS 9-16042 State Univ of New York - Buffalo 3904**  
Life science flight experiment: Inflight study of cardiovascular deconditioning definition phase

Period	Obligations	
01/17/80-10/31/86	FY85: \$330,000	TOTAL: \$1,038,020
Prin. Invest.	NASA Tech. Officer	CASE Category
Farhi, L.	JSC/Peck, E. E.	59-Life Sci, NEC

**NAG 1-442 State Univ of New York - Buffalo 3898**  
Interaction of space radiation with composite materials

Period	Obligations	
01/20/84-07/14/86	FY85: \$56,144	TOTAL: \$106,068
Prin. Invest.	NASA Tech. Officer	CASE Category
Rustgi, M. L.	LARC/Long, S. T.	13-Physics

**NGR 33-015-108 State Univ of New York - Buffalo 3905**  
Planetary curriculum and related geologic research

Period	Obligations	
06/02/70-03/31/86	FY85: \$64,859	TOTAL: \$709,073
Prin. Invest.	NASA Tech. Officer	CASE Category
King, J. S.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

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**NGT 33-183-800 State Univ of New York - Buffalo 3906**  
 NASA graduate student researchers program  

Period	Obligations	
06/01/83-05/31/85	FY85:	TOTAL: \$25,202
Prin. Invest.	NASA Tech. Officer	CASE Category
George, W. K.	HQ-LB/Owens, F. C.	41-Aero Engr

**NGT 33-183-801 State Univ of New York - Buffalo 3907**  
 NASA graduate student researchers program  

Period	Obligations	
05/20/83-05/19/86	FY85: \$18,000	TOTAL: \$48,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Inman, D. J.	HQ-LB/Owens, F. C.	46-Mech Engr

**NGT 33-183-802 State Univ of New York - Buffalo 3908**  
 NASA graduate student researchers program  

Period	Obligations	
08/30/84-08/12/86	FY85: \$18,000	TOTAL: \$33,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Inman, D. J.	HQ-LB/Owens, F. C.	46-Mech Engr

**NAG 2-329 State Univ of New York - Stony Brook 3909**  
 Studies of the aurorally induced ultraviolet emissions on the nightside of Venus  

Period	Obligations	
01/01/85-12/31/85	FY85: \$19,155	TOTAL: \$19,155
Prin. Invest.	NASA Tech. Officer	CASE Category
Fox, J. L.	ARC/Fimmel, R. O.	13-Physics

**NAG 3-651 State Univ of New York - Stony Brook 3910**  
 Expert system for organic synthesis discovery  

Period	Obligations	
08/10/85-08/09/86	FY85: \$49,891	TOTAL: \$49,891
Prin. Invest.	NASA Tech. Officer	CASE Category
Gelernter, H. L.	LERC/Sutter, J. K.	12-Chemistry
	LERC/Serafini, T. T.	

**NAG 5-275 State Univ of New York - Stony Brook 3911**  
 Solar system investigations  

Period	Obligations	
10/01/82-12/31/85	FY85: \$14,000	TOTAL: \$50,950
Prin. Invest.	NASA Tech. Officer	CASE Category
Caldwell, J.	GSFC/Kondo, Y.	11-Astronomy
Owen, T.		

**NAG 5-555 State Univ of New York - Stony Brook 3912**  
 A study of mass-exchange in algal type benaries  

Period	Obligations	
06/01/85-05/31/86	FY85: \$14,000	TOTAL: \$14,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hardorp, J.	GSFC/Kondo, Y.	11-Astronomy
Cugier, H.		

**NAG 9-31 State Univ of New York - Stony Brook 3913**  
 Crystal chemistry and chemical petrology of lunar rocks  

Period	Obligations	
02/01/83-01/31/85	FY85:	TOTAL: \$83,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Lindsley, D. H.	JSC/Dietrich, J. W.	13-Physics

**NAG 9-85 State Univ of New York - Stony Brook 3914**  
 The kolar schist belt a possible Archean suture zone  

Period	Obligations	
03/01/84-06/01/86	FY85: \$25,000	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hanson, G. N.	JSC/Phinney, W. C.	32-Geological Sci

**NAGW 160 State Univ of New York - Stony Brook 3915**  
 Interdisciplinary studies with Voyager Jupiter data  

Period	Obligations	
04/01/81-08/31/85	FY85:	TOTAL: \$108,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Caldwell, J. J.	HQ-EL/Brinton, H. C.	31-Atmos Sci

**NAGW 353 State Univ of New York - Stony Brook 3916**  
 Measurement of concentration and variation in stratospheric chlorine oxide from a portable ground based millimeter wave system  

Period	Obligations	
05/15/82-10/31/85	FY85: \$136,806	TOTAL: \$383,603
Prin. Invest.	NASA Tech. Officer	CASE Category
Soloman, P. M.	HQ-EE/Hampson, R. F.	31-Atmos Sci
Dezafr, R.	HQ-EB/Watson, R. T.	

**NAGW 486 State Univ of New York - Stony Brook 3917**  
 Protogenesis of the archean gravitic rocks, Raisy Lake, Ontario  

Period	Obligations	
08/01/83-07/31/84	FY85:	TOTAL: \$4,993
Prin. Invest.	NASA Tech. Officer	CASE Category
Hanson, G. N.	HQ-EL/Williams, R. J.	32-Geological Sci
	HQ-EL/French, B. M.	

**NAGW 665 State Univ of New York - Stony Brook 3918**  
 Studies of the chemistry of vibrationally and electronically excited species in planetary upper atmospheres  

Period	Obligations	
11/01/84-04/30/86	FY85: \$33,255	TOTAL: \$33,255
Prin. Invest.	NASA Tech. Officer	CASE Category
Fox, J. L.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 725 State Univ of New York - Stony Brook 3919**  
 Laboratory investigations on volatile trapping in comets  

Period	Obligations	
03/01/85-12/01/85	FY85: \$45,000	TOTAL: \$45,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Owens, T.	HQ-EB/De Vincenzi, D. L.	12-Chemistry
Bar-nun, A.	HQ-EB/Rambler, M. B.	

**NAGW 760 State Univ of New York - Stony Brook 3920**  
 Investigation of lunar crustal structure and isostasy  

Period	Obligations	
08/01/85-07/31/86	FY85: \$18,544	TOTAL: \$18,544
Prin. Invest.	NASA Tech. Officer	CASE Category
Thurber, C. H.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

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## NEW YORK (Continued)

**NAS 1-16444 State Univ of New York - Stony Brook 3921**  
Science support for the Earth radiation budget experiment (ERBE)

Period	Obligations	
09/24/80-01/31/86	FY85: \$54,000	TOTAL: \$295,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cess, R. S.	LARC/Keynton, R. J.	31-Atmos Sci
	LARC/Barkstrom, B. R.	

**NAS 5-26395 State Univ of New York - Stony Brook 3922**  
Energetic particle acceleration research

Period	Obligations	
12/04/80-04/04/85	FY85:	TOTAL: \$100,487
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Forman, M. A.	GSFC/Ramaty, R.	13-Physics

**NAS 8-32904 State Univ of New York - Stony Brook 3923**  
Scientific investigations in support of the space telescope project

Period	Obligations	
02/01/78-06/30/86	FY85: \$42,700	TOTAL: \$215,669
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Caldwell, J. J.	MSFC/O'dell, C. R.	11-Astronomy

**NAS 9-17187 State Univ of New York - Stony Brook 3924**  
Network operating system techniques applicable to controlling inter-module communication in a space station

Period	Obligations	
07/06/84-11/30/84	FY85:	TOTAL: \$14,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wittie, L. D.	JSC/Vaughn, R. D.	22-Computer Science

**NCA 2-760301 State Univ of New York - Stony Brook 3925**  
The surfaces of Iapetus and Titan: Characterization by coupling satellite observations with spectroscopic measurements of synthetic materials

Period	Obligations	
02/01/83-06/30/84	FY85:	TOTAL: \$47,118
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Owen, T.	ARC/Chang, S.	31-Atmos Sci
Scattergood, T.		

**NCC 2-311 State Univ of New York - Stony Brook 3926**  
Chemistry of the outer planets

Period	Obligations	
07/01/84-12/14/85	FY85: \$82,638	TOTAL: \$82,638
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Scattergood, T. W.	ARC/Chang, S.	12-Chemistry

**NCC 3-2 State Univ of New York - Stony Brook 3927**  
Analytic modeling of soot formation under fuel rich conditions

Period	Obligations	
07/01/79-12/30/84	FY85:	TOTAL: \$198,908
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yang, C. H.	LERC/Brabbs, T. A.	12-Chemistry
Berlad, A. L.		

**NCC 5-7 State Univ of New York - Stony Brook 3928**  
Atmospheric pollution: Development and application

Period	Obligations	
04/09/79-09/30/84	FY85:	TOTAL: \$337,712
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hogan, J. S.	GSFC/Stewart, R. W.	31-Atmos Sci
Hameed, S.		

**NGR 33-015-139 State Univ of New York - Stony Brook 3929**  
Quantitative spectroscopic measurements on the principal constituents in planetary atmospheres

Period	Obligations	
04/12/71-05/31/86	FY85: \$51,566	TOTAL: \$565,924
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Varanasi, P.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Quaide, W. L.	

**NGR 33-015-141 State Univ of New York - Stony Brook 3930**  
Spectroscopic observations of the planets

Period	Obligations	
01/26/71-01/31/86	FY85: \$43,000	TOTAL: \$525,999
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Owen, T. C.	HQ-EL/Brinton, H. C.	11-Astronomy
	HQ-EL/Bergstrahl, J. T.	

**NGT 33-015-801 State Univ of New York - Stony Brook 3931**  
NASA graduate student researchers program

Period	Obligations	
08/01/81-07/31/84	FY85:	TOTAL: \$31,552
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Berlad, A. L.	HQ-LB/Owens, F. C.	46-Mech Engr

**NGT 33-015-802 State Univ of New York - Stony Brook 3932**  
NASA graduate student researchers program

Period	Obligations	
09/01/82-08/31/85	FY85:	TOTAL: \$43,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schubel, J.	HQ-LB/Owens, F. C.	54-Env Biology

**NGT 33-015-803 State Univ of New York - Stony Brook 3933**  
NASA graduate student researchers program

Period	Obligations	
06/01/85-05/31/86	FY85: \$18,000	TOTAL: \$18,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Knacke, R.	HQ-LE/Owens, F. C.	11-Astronomy

**NGT 33-183-804 State Univ of New York - Stony Brook 3934**  
NASA graduate student researchers program

Period	Obligations	
07/01/85-06/30/86	FY85: \$18,000	TOTAL: \$18,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Inman, D. J.	HQ-LE/Owens, F. C.	41-Aero Engr

**NSG 7270 State Univ of New York - Stony Brook 3935**  
Cells, embryos and development in space

Period	Obligations	
09/01/76-10/31/85	FY85: \$98,495	TOTAL: \$694,065
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Krikorian, A. D.	HQ-EB/Halstead, T. W.	51-Biological Sci
Steward, F. C.		

**NASA'S UNIVERSITY PROGRAM  
NEW YORK (Continued)**

**NSG 7286 State Univ of New York - Stony Brook 3936**  
Infrared spectroscopy of Jupiter and Saturn  
*Period Obligations*  
09/01/76-09/30/85 FY85: TOTAL: \$218,409  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Knacke, R. F. HQ-EL/Brinton, H. C. 11-Astronomy  
HQ-EL/Hillman, J. J.

**NAG 1-129 Syracuse University 3943**  
Aeroacoustics of a porous plug jet noise suppressor  
*Period Obligations*  
01/01/81-11/30/83 FY85: TOTAL: \$97,327  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Dosanjh, D. LARC/Seiner, J. M. 41-Aero Engr  
LARC/Norum, T. D.

**NSG 7320 State Univ of New York - Stony Brook 3937**  
Theoretical planetary physics  
*Period Obligations*  
04/01/77-08/31/85 FY85: TOTAL: \$221,052  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Caldwell, J. J. HQ-EL/Brunk, W. E. 11-Astronomy  
HQ-EL/Brinton, H. C.

**NAG 2-306 Syracuse University 3944**  
Linear and nonlinear dynamic analysis of redundant load path bearingless rotor systems  
*Period Obligations*  
07/01/84-06/30/86 FY85: \$54,935 TOTAL: \$84,722  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Murthy, V. R. ARC/Peterson, R. 41-Aero Engr  
ARC/Warmbrodt, W.

**NSG 7553 State Univ of New York - Stony Brook 3938**  
Outer solar system nomenclature  
*Period Obligations*  
04/01/79-12/31/85 FY85: TOTAL: \$54,272  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Owens, T. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NAG 3-348 Syracuse University 3945**  
Analysis of fatigue crack growth mechanism and oxidation and fatigue lives at elevated temperatures  
*Period Obligations*  
10/30/82-10/27/85 FY85: \$110,004 TOTAL: \$292,850  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Liu, H. W. LERC/Telesman, J. 47-Materials Engr  
LERC/Hirschberg, M. H.

**NAG 2-162 State Univ of New York - Downstate Med Ctr 3939**  
Mechanism and control of disuse atrophy in skeletal muscle  
*Period Obligations*  
03/01/82-02/28/86 FY85: \$63,050 TOTAL: \$218,928  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ettinger, J. D. ARC/Ellis, S. 59-Life Sci, NEC  
Ellis, S.

**NAG 3-621 Syracuse University 3946**  
Unsteady transonic heat transfer in a transient facility  
*Period Obligations*  
02/28/85-02/27/86 FY85: \$51,074 TOTAL: \$51,074  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Legraff, J. E. 46-Mech Engr  
LERC/Simoneau, R. J.

**NAS 5-27595 State Univ of New York - Upstate Med Ctr 3940**  
Simulation study of effects of scan angle and spectral instrument response on sensor output and target contrast ratio  
*Period Obligations*  
04/08/83-10/07/85 FY85: \$11,185 TOTAL: \$66,155  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Duggin, M. J. GSFC/Oseroff, H. 39-Env Sci, NEC

**NAGW 466 Syracuse University 3947**  
Environmental degradation of materials: Surface chemistry related to stress corrosion cracking  
*Period Obligations*  
05/15/83-05/14/84 FY85: TOTAL: \$32,729  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Schwarz, J. A. HQ-EN/Gordon, P. 43-Chem Engr  
Pasco, R. W. HQ-EN/Oran, W. A.

**NAG 1-131 State Univ of New York Col - Oneonta 3941**  
Transonic normal shock-laminar boundary layer interactions with suction  
*Period Obligations*  
01/01/81-08/31/85 FY85: \$63,456 TOTAL: \$306,693  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ram, R. B. LARC/Harvey, W. D. 41-Aero Engr

**NAG 2-117 University of Rochester 3948**  
Development of an infrared CCD for use in astronomy  
*Period Obligations*  
06/01/81-10/31/85 FY85: \$88,993 TOTAL: \$297,564  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Forrest, W. J. ARC/Goebel, J. H. 11-Astronomy  
Pipher, J. L. ARC/McCreight, C. R.  
Boyd, R. W.

**NSG 5077 State Univ of New York College - Purchase 3942**  
Spectral and Monte Carlo predictability studies  
*Period Obligations*  
09/01/75-02/28/86 FY85: \$38,688 TOTAL: \$209,648  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Tenenbaum, J. GSFC/Straus, D. 31-Atmos Sci  
Reddi, M.

**NAG 2-309 University of Rochester 3949**  
Excitation conditions in the galaxy and the helium abundance gradient  
*Period Obligations*  
11/01/84-10/31/86 FY85: \$40,000 TOTAL: \$40,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Pipher, J. L. ARC/Haughney, L. C. 11-Astronomy  
Helfer, H. L.

# **NASA'S UNIVERSITY PROGRAM NEW YORK (Continued)**

**NAG 3-414 University of Rochester 3950**  
Energy transfer using localized plasma resonances  
*Period Obligations*  
03/25/83-11/29/85 FY85: \$84,151 TOTAL: \$202,912  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hall, D. G. LERC/Arrison, A. 19-Phys Sci, NEC

**NAG 5-408 University of Rochester 3951**  
High dust temperatures in galactic infrared sources  
*Period Obligations*  
07/01/84-12/31/85 FY85: \$3,873 TOTAL: \$11,238  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Woodward, C. E. GSFC/Kondo, Y. 11-Astronomy

**NAG 5-505 University of Rochester 3952**  
Umbral oscillations in sunspots  
*Period Obligations*  
02/15/85-02/14/86 FY85: \$28,600 TOTAL: \$28,600  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Thomas, J. H. GSFC/Bullock, G. D. 13-Physics  
Lites, B. W.

**NAS 8-34892 University of Rochester 3953**  
Blood flow in small vessels  
*Period Obligations*  
10/21/82-09/30/85 FY85: TOTAL: \$190,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cokelet, G. R. MSFC/Moore, W. W., Jr. 59-Life Sci, NEC  
Meiselman, H. J. MSFC/Snyder, R. S.  
Goldsmith, H. L.

**NSG 7562 University of Rochester 3954**  
Basic research in sunspot dynamics  
*Period Obligations*  
10/01/78-10/31/85 FY85: \$34,000 TOTAL: \$171,204  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Thomas, J. H. HQ-EZ/Spicer, D. S. 13-Physics

**NAS 8-35807 Webb Institute of Naval Architecture 3955**  
Dynamic response of ss transcolumbia and accelerations of space telescope payload  
*Period Obligations*  
10/10/83-06/29/84 FY85: TOTAL: \$21,127  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hadler, J. B. MSFC/Elrod, W. L. 13-Physics

## **NORTH CAROLINA**

**NAG 1-70 Duke University 3956**  
Design of the hybrid automated reliability predictor  
*Period Obligations*  
06/01/80-09/30/85 FY85: \$95,000 TOTAL: \$298,174  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Trivedi, K. S. LARC/Bavuso, S. J. 29-Math/Cmputer, NEC  
Geist, R. M. LARC/Lupton, A. O.

**NAG 1-466 Duke University 3957**  
Parallel methods for large scale scientific and engineering computations: Models and architectures  
*Period Obligations*  
04/01/84-05/31/86 FY85: \$69,828 TOTAL: \$128,835  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Patrick, M. L. LARC/Stroud, W. J. 22-Computer Science  
LARC/Bostic, S. W.

**NAG 3-516 Duke University 3958**  
Dynamics of nonlinear-engine structural systems including damping  
*Period Obligations*  
01/10/84-04/01/85 FY85: TOTAL: \$44,646  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Dowell, E. H. LERC/Brown, G. V. 46-Mech Engr

**NAG 5-379 Duke University 3959**  
Critical transport phenomena in fluid helium under low gravity  
*Period Obligations*  
11/15/83-12/31/85 FY85: \$182,670 TOTAL: \$241,752  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Meyer, H. GSFC/Castles, S. H. 13-Physics  
Behringer, R. P. GSFC/Ryschkewitsch, M. G.

**NAGW 189 Duke University 3960**  
Millimeter and submillimeter wave spectroscopic laboratory studies of interstellar molecule  
*Period Obligations*  
06/01/81-05/31/86 FY85: \$54,955 TOTAL: \$267,032  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Herbst, E. HQ-EZ/Stencel, R. E. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NAS 9-17160 Duke University 3961**  
The effects of exercise of nitrogen elimination during oxygen breathing  
*Period Obligations*  
07/01/84-03/01/86 FY85: \$87,000 TOTAL: \$136,980  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Horrigan, D. J. JSC/Vann, R. D. 56-Medical Sciences

**NAS13-255 Duke University 3962**  
Obtaining map sheets resulting from three specific research tasks involving remote sensing of forest dynamics in the tropical regions of Costa Rica and Puerto Rico  
*Period Obligations*  
08/08/84-04/30/86 FY85: \$49,864 TOTAL: \$85,344  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Stone, D. E. NSTL/Joyce, A. T. 32-Geological Sci  
Schnell, C. B.

**NCA 2-206301 Duke University 3963**  
Formulation of a mathematical model of chlorella gas-exchange kinetics in open and closed culture systems  
*Period Obligations*  
04/01/83-03/31/85 FY85: \$1,672 TOTAL: \$21,730  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Quinlan, A. V. ARC/MacElroy, R. D. 59-Life Sci, NEC

**NASA'S UNIVERSITY PROGRAM  
NORTH CAROLINA (Continued)**

<b>NSG 3160 Duke University 3964</b>			<b>NAG 1-407 North Carolina A&amp;T State University 3971</b>		
Acceleration of convergence			Mid infrared laser heterodyne spectroscopy system packaging using flexible waveguides		
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
06/01/77-07/27/86	FY85:	TOTAL: \$114,867	10/01/83-10/31/85	FY85:	TOTAL: \$66,200
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, D. A.	LERC/Ford, W. E.	21-Mathematics	Yu, C.	LARC/Hoell, J. M.	19-Phys Sci, NEC
<b>NSG 7540 Duke University 3965</b>			<b>NAG 1-408 North Carolina A&amp;T State University 3972</b>		
Millimeter and submillimeter spectroscopy of molecules of atmospheric importance			Development of computer models for correlating data of film cooling of nose cone under hypersonic flow		
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
03/01/79-02/28/86	FY85: \$88,458	TOTAL: \$437,708	10/01/83-10/31/85	FY85:	TOTAL: \$155,802
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Delucia, F. C.	HQ-EE/Hampson, R. F.	31-Atmos Sci	Goswami, D. Y.	LARC/Nowak, R. J.	46-Mech Engr
	HQ-EE/De More, W. B.		Min, T. C.	LARC/Hunt, L. R.	
			Sharpe, L.		
<b>NAG 2-365 East Carolina University 3966</b>			<b>NAG 1-414 North Carolina A&amp;T State University 3973</b>		
Microgravitational effects on chromosome behavior			A study of reactive plasma deposited thin films		
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
07/01/85-06/30/86	FY85: \$28,000	TOTAL: \$28,000	10/01/83-10/31/85	FY85:	TOTAL: \$198,558
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bruschi, C. V.	ARC/Winget, C. M.	51-Biological Sci	Gilchrist, J.	LARC/Magee, C. J.	13-Physics
				LARC/Clark, I. O.	
<b>NAG 1-403 North Carolina A&amp;T State University 3967</b>			<b>NCA 2-15 North Carolina A&amp;T State University 3974</b>		
Heteroepitaxial growth of III-V semiconductor compounds by metal-organic chemical vapor deposition for device applications			Space suit inventory model for a space station		
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
10/01/83-10/31/85	FY85:	TOTAL: \$163,135	04/01/85-03/31/86	FY85: \$39,893	TOTAL: \$39,893
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Abul-fadl, A.	LARC/Clark, I. O.	45-Elec Engr	Park, E.	ARC/Junge, M.	49-Engr, NEC
Iyer, S.	LARC/Magee, C. J.		Ram, B.		
<b>NAG 1-404 North Carolina A&amp;T State University 3968</b>			<b>NCA 2-22 North Carolina A&amp;T State University 3975</b>		
Effect of fatigue and thermal loads on graphite fiber-reinforced glass matrix composites			Formatting alphanumeric CRT displays		
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
10/01/83-10/31/85	FY85:	TOTAL: \$263,479	04/01/85-03/31/86	FY85: \$39,732	TOTAL: \$39,732
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Avva, V. S.	LARC/Dicus, D. L.	47-Materials Engr	Pulat, B. M.	ARC/Nagel, D. C.	69-Psych, NEC
Sankar, J.				ARC/Voorhees, J. W.	
Craft, W. J.					
<b>NAG 1-405 North Carolina A&amp;T State University 3969</b>			<b>NCA 2-23 North Carolina A&amp;T State University 3976</b>		
Dynamics and control of orbiting grid structures and the synchronously deployable beam			Application of multi criteria decision making to evaluation of pilot performance at varying levels of proficiency		
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
10/01/83-10/31/85	FY85:	TOTAL: \$273,773	09/01/85-08/31/86	FY85: \$30,803	TOTAL: \$30,803
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Abu-saba, E.	LARC/Montgomery, R. C.	42-Astro Engr	Pulat, P. S.	ARC/Billings, C. E.	69-Psych, NEC
<b>NAG 1-406 North Carolina A&amp;T State University 3970</b>			<b>NCA 2-24 North Carolina A&amp;T State University 3977</b>		
Study of the effect of non-sand-grain surface roughness on heat transfer and drag in subsonic boundary layer flow			Dynamic prioritization of information for a helicopter pilot		
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
10/01/83-10/31/85	FY85:	TOTAL: \$187,637	05/01/85-04/30/86	FY85: \$39,611	TOTAL: \$39,611
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Klett, D. E.	ARC/Weinstein, L. M.	41-Aero Engr	Ram, B.	ARC/Nagel, D. C.	69-Psych, NEC
Goswami, D. Y.	LARC/Hefner, J. N.		Park, E. H.	ARC/Voorhees, J. W.	
Chauhan, R. S.					



# **NASA'S UNIVERSITY PROGRAM** **NORTH CAROLINA (Continued)**

**NCA 2-545201 North Carolina A&T State University 3978**  
 Student Space Shuttle program/design phase

Period	Obligations
06/01/82-07/31/86	FY85: \$52,980 TOTAL: \$165,058
Prin. Invest.	NASA Tech. Officer CASE Category
Ahrens, S. T.	ARC/Berry, W. E. 51-Biological Sci

**NSG 1390 North Carolina A&T State University 3979**  
 Material growth and characterization of III-V compounds for solid state devices

Period	Obligations
02/01/77-11/30/85	FY85: \$175,000 TOTAL: \$1,250,000
Prin. Invest.	NASA Tech. Officer CASE Category
Stefanakos, E. K.	LARC/Magee, C. J. 45-Elec Engr
Collis, W. J.	LARC/Clark, I. O.
Abul-fadl, A.	

**NAG 1-187 North Carolina Central University 3980**  
 Laser heterodyne spectroscopy of stratospheric gases

Period	Obligations
06/01/81-08/31/84	FY85: TOTAL: \$84,319
Prin. Invest.	NASA Tech. Officer CASE Category
Jones, C. R.	LARC/Kendall, B. M. 13-Physics
Dutta, J. M.	

**NAG 1-20 North Carolina State Univ. - Raleigh 3981**  
 Studies of image analysis

Period	Obligations
02/01/80-04/30/84	FY85: TOTAL: \$249,710
Prin. Invest.	NASA Tech. Officer CASE Category
Snyder, W. E.	LARC/Benz, H. F. 45-Elec Engr
Rajala, S. A.	

**NAG 1-103 North Carolina State Univ. - Raleigh 3982**  
 Representation and rendering of shape preserving curves and surfaces in computer aided design

Period	Obligations
10/01/80-09/30/85	FY85: \$18,000 TOTAL: \$134,764
Prin. Invest.	NASA Tech. Officer CASE Category
McAllister, D. F.	LARC/Lansing, D. L. 29-Math/Computer, NEC
Fletcher, G. Y.	LARC/Shoosmith, J. N.

**NAG 1-244 North Carolina State Univ. - Raleigh 3983**  
 Numerical solutions of the complete Navier Stokes equations

Period	Obligations
01/01/82-02/28/87	FY85: \$50,000 TOTAL: \$320,626
Prin. Invest.	NASA Tech. Officer CASE Category
Hassan, H. A.	LARC/Harris, J. E. 41-Aero Engr
Dejarnette, F. R.	LARC/Rudy, D. H.
Walters, R. W.	

**NAG 1-285 North Carolina State Univ. - Raleigh 3984**  
 Material systems for infrared detection and visible laser emission

Period	Obligations
06/01/82-10/31/84	FY85: TOTAL: \$99,201
Prin. Invest.	NASA Tech. Officer CASE Category
Bedair, S. M.	LARC/Magee, C. J. 13-Physics
Hauser, J. R.	LARC/Clark, I. O.
Schreiner, A. F.	

**NAG 1-354 North Carolina State Univ. - Raleigh 3985**  
 Zone leveling and solution growth of complex compound semiconductors in space

Period	Obligations
05/01/83-04/30/86	FY85: \$67,610 TOTAL: \$240,010
Prin. Invest.	NASA Tech. Officer CASE Category
Bachmann, K. J.	ARC/Crouch, R. K. 19-Phys Sci, NEC
	ARC/Fripp, A. L.

**NAG 1-424 North Carolina State Univ. - Raleigh 3986**  
 The effects of amplitude and phase of acoustic excitation of a large eddy breakup (LEBU) device on viscous flow drag reduction

Period	Obligations
11/01/83-01/31/86	FY85: \$30,679 TOTAL: \$75,679
Prin. Invest.	NASA Tech. Officer CASE Category
Nagel, R. T.	LARC/Anders, J. B. 41-Aero Engr
	LARC/Bushnell, D. M.

**NAG 1-440 North Carolina State Univ. - Raleigh 3987**  
 Dependencies in Fault tolerant software

Period	Obligations
01/01/84-08/31/85	FY85: TOTAL: \$53,714
Prin. Invest.	NASA Tech. Officer CASE Category
McAllister, D. F.	LARC/Eckhardt Jr., D. E.
Deimel, L. E.	22-Computer Science

**NAG 1-503 North Carolina State Univ. - Raleigh 3988**  
 Data management technology-functional requirements for a generative database

Period	Obligations
07/01/84-08/31/85	FY85: TOTAL: \$49,990
Prin. Invest.	NASA Tech. Officer CASE Category
Rasdort, W. J.	LARC/Rogers, J. L. 22-Computer Science

**NAG 1-509 North Carolina State Univ. - Raleigh 3989**  
 Second generation experiment in Fault tolerant software

Period	Obligations
09/01/84-08/31/85	FY85: TOTAL: \$79,425
Prin. Invest.	NASA Tech. Officer CASE Category
McAllister, D. F.	LARC/Eckhardt, D. E., Jr.
Deimel, L. E.	22-Computer Science

**NAG 1-525 North Carolina State Univ. - Raleigh 3990**  
 The crystallization of tough thermoplastic resins in the presence of carbon fibers

Period	Obligations
11/01/84-10/31/85	FY85: \$46,235 TOTAL: \$46,235
Prin. Invest.	NASA Tech. Officer CASE Category
Theil, M. H.	LARC/Wakelyn, N. T. 47-Materials Engr
	LARC/Johnston, N. J.

**NAG 1-604 North Carolina State Univ. - Raleigh 3991**  
 Constraint semantics in engineering database use

Period	Obligations
06/26/85-10/25/86	FY85: \$86,822 TOTAL: \$86,822
Prin. Invest.	NASA Tech. Officer CASE Category
Rasdorf, W. J.	LARC/Rogers, J. L. 22-Computer Science
	LARC/Sobieski, J.

# **NASA'S UNIVERSITY PROGRAM** **NORTH CAROLINA (Continued)**

**NAG 2-337 North Carolina State Univ. - Raleigh 3992**  
Computation flow graph and performance evaluation of multicomputers

Period	Obligations	
01/01/85-12/31/85	FY85: \$39,483	TOTAL: \$39,483
Prin. Invest.	NASA Tech. Officer	CASE Category
Agrawal, D. P.	ARC/Schulbach, C. H.	22-Computer Science

**NAG 3-608 North Carolina State Univ. - Raleigh 3993**  
Theoretical evaluation of engine auxiliary inlet designs for supersonic V/STOL aircraft

Period	Obligations	
01/25/85-04/24/86	FY85: \$30,000	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Boles, M. A.	LERC/Johns, A. L.	41-Aero Engr

**NAG 3-611 North Carolina State Univ. - Raleigh 3994**  
Rotor dynamic response of geared systems

Period	Obligations	
02/01/85-01/31/86	FY85: \$30,876	TOTAL: \$30,876
Prin. Invest.	NASA Tech. Officer	CASE Category
David, J. W.	LERC/Fleming, D. P.	46-Mech Engr
	LERC/Kascak, A. F.	

**NAG 3-649 North Carolina State Univ. - Raleigh 3995**  
Cyclic voltammetry in a porous electrode

Period	Obligations	
07/28/85-07/27/86	FY85: \$25,783	TOTAL: \$25,783
Prin. Invest.	NASA Tech. Officer	CASE Category
Fedkiw, P. S.	LERC/Kang, M. P.	43-Chem Engr
	LERC/O'Donnell, P.	

**NAG 8-475 North Carolina State Univ. - Raleigh 3996**  
Structure of nickel and iron aluminides prepared by rapid solidification and undercooling

Period	Obligations	
08/01/84-02/28/86	FY85: \$34,412	TOTAL: \$114,412
Prin. Invest.	NASA Tech. Officer	CASE Category
Koch, C. C.	MSFC/Black, R. E.	47-Materials Engr

**NAGW 367 North Carolina State Univ. - Raleigh 3997**  
Geographical variation in the relationships of temperatures

Period	Obligations	
09/01/82-08/31/84	FY85:	TOTAL: \$103,409
Prin. Invest.	NASA Tech. Officer	CASE Category
Kamykowski, D.	HQ-EE/Esaias, W. E.	33-Oceanography
	HQ-EE/Wilson, W. S.	

**NAS 1-17229 North Carolina State Univ. - Raleigh 3998**  
Preliminary design of high-altitude platform aeroelastic wind-tunnel models for use in the Langley transonic dynamics tunnel

Period	Obligations	
12/03/82-11/17/83	FY85:	TOTAL: \$14,828
Prin. Invest.	NASA Tech. Officer	CASE Category
Turner, C. D.	LARC/Ricketts, R. H.	41-Aero Engr

**NAS 5-27669 North Carolina State Univ. - Raleigh 3999**  
Photometric observation in support of sounding rocket chemical release

Period	Obligations	
05/10/83-12/31/83	FY85:	TOTAL: \$7,598
Prin. Invest.	NASA Tech. Officer	CASE Category
Manring, E. R.	GSFC/Ledley, B.	19-Phys Sci, NEC

**NAS 6-3018 North Carolina State Univ. - Raleigh 4000**  
Perform statistical modelling of surface water movements using radar altimeter data

Period	Obligations	
07/01/79-09/30/85	FY85:	TOTAL: \$104,623
Prin. Invest.	NASA Tech. Officer	CASE Category
Tung, C. C.	GSFC/Huang, N. E.	33-Oceanography
	GSFC/Long, S. R.	

**NCC 1-22 North Carolina State Univ. - Raleigh 4001**  
Computational fluid mechanics

Period	Obligations	
06/15/79-09/14/87	FY85: \$105,500	TOTAL: \$897,562
Prin. Invest.	NASA Tech. Officer	CASE Category
Hassan, H. A.	LARC/Salas, M. D.	41-Aero Engr
Dejarnette, F. R.	LARC/Keller, J. D.	

**NCC 1-46 North Carolina State Univ. - Raleigh 4002**  
Investigation of the aerodynamic characteristics of vortex flows

Period	Obligations	
09/18/80-05/14/86	FY85: \$58,682	TOTAL: \$201,215
Prin. Invest.	NASA Tech. Officer	CASE Category
Dejarnette, F. R.	LARC/Schooneover, W. E., Jr.	41-Aero Engr
	LARC/Hall, R. M.	

**NCC 1-84 North Carolina State Univ. - Raleigh 4003**  
Physics of aircraft wakes

Period	Obligations	
05/14/84-12/31/85	FY85:	TOTAL: \$90,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Hassan, H. A.	LARC/Erickson, W. D.	41-Aero Engr
Perkins, J. N.		

**NCC 1-98 North Carolina State Univ. - Raleigh 4004**  
Investigation of the effects of surface roughness on the flow over models in cryogenic wind tunnels

Period	Obligations	
05/15/85-09/30/86	FY85: \$35,457	TOTAL: \$35,457
Prin. Invest.	NASA Tech. Officer	CASE Category
Dejarnette, F. R.	LARC/Gloss, B. B.	41-Aero Engr

**NCC 1-100 North Carolina State Univ. - Raleigh 4005**  
Approximate numerical methods for calculating nonequilibrium viscous flow fields and aerodynamic heating over three dimensional bodies

Period	Obligations	
07/15/85-09/30/85	FY85: \$13,386	TOTAL: \$13,386
Prin. Invest.	NASA Tech. Officer	CASE Category
Dejarnette, F. R.	LARC/Zoby, E. V.	41-Aero Engr

# **NASA'S UNIVERSITY PROGRAM** **NORTH CAROLINA (Continued)**

**NCC 2-101 North Carolina State Univ. - Raleigh 4006**  
Plant growth in controlled environments in response to characteristics of nutrient solutions

Period	Obligations	
01/01/81-02/28/86	FY85: \$69,371	TOTAL: \$261,108
Prin. Invest.	NASA Tech. Officer	CASE Category
Raper, C. D., Jr.	ARC/MacElroy, R.	55-Agriculture Sci

**NGT 34-002-800 North Carolina State Univ. - Raleigh 4007**  
NASA graduate student researchers program

Period	Obligations	
06/01/83-08/31/85	FY85:	TOTAL: \$27,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Hassan, H. A.	HQ-LB/Owens, F. C.	41-Aero Engr

**NGT 34-002-801 North Carolina State Univ. - Raleigh 4008**  
NASA graduate student researchers program

Period	Obligations	
05/13/85-05/12/86	FY85: \$18,000	TOTAL: \$18,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hassan, H. A.	HQ-LE/Owens, F. C.	41-Aero Engr

**NGT 34-003-803 North Carolina State Univ. - Raleigh 4009**  
NASA graduate student researchers program

Period	Obligations	
05/14/84-05/14/86	FY85: \$18,000	TOTAL: \$31,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Dejarnette, F.	HQ-LB/Owens, F. C.	41-Aero Engr

**NSG 1562 North Carolina State Univ. - Raleigh 4010**  
Study of the effects of high energy radiation on the mechanical properties of graphite-fiber reinforced epoxy resins

Period	Obligations	
10/01/78-12/31/85	FY85: \$65,000	TOTAL: \$421,114
Prin. Invest.	NASA Tech. Officer	CASE Category
Fornes, R. E.	LARC/Long, E. R., Jr.	13-Physics
Memory, J. D.	LARC/Slemp, W. S.	
Gilbert, R. D.		

**NSG 1588 North Carolina State Univ. - Raleigh 4011**  
Large reflector antenna analysis research

Period	Obligations	
01/01/79-04/30/85	FY85:	TOTAL: \$286,391
Prin. Invest.	NASA Tech. Officer	CASE Category
Kauffman, J. F.	LARC/Bailey, M. C.	45-Elec Engr
	LARC/Beck, F. B.	

**NAG 1-428 Pembroke State University 4012**  
Error analysis and iterative correction of nonlinear finite elements results for orthotropic plates

Period	Obligations	
11/15/83-02/14/86	FY85: \$4,992	TOTAL: \$7,082
Prin. Invest.	NASA Tech. Officer	CASE Category
Reissner, J. E.	LARC/Thurston, G. A.	41-Aero Engr

**NAG 1-181 University of North Carolina - Chapel Hill 4013**  
Biogeochemistry of methane production in wetland soils

Period	Obligations	
05/01/81-09/30/84	FY85:	TOTAL: \$30,575
Prin. Invest.	NASA Tech. Officer	CASE Category
Martens, C. S.	LARC/Harriss, R. C.	39-Env Sci, NEC
	LARC/Sebacher, D. I.	

**NAG 2-181 University of North Carolina - Chapel Hill 4014**  
Biochemical changes in bone in a model of weightlessness

Period	Obligations	
06/01/82-12/31/85	FY85: \$85,000	TOTAL: \$279,998
Prin. Invest.	NASA Tech. Officer	CASE Category
Mechanic, G.	ARC/Young, D. R.	56-Medical Sciences

**NAG 5-424 University of North Carolina - Chapel Hill 4015**

Ultraviolet observations of blue stragglers and hols K D worfs

Period	Obligations	
07/01/84-06/30/86	FY85: \$6,200	TOTAL: \$12,400
Prin. Invest.	NASA Tech. Officer	CASE Category
Carney, B. W.	GSFC/Kondo, Y.	11-Astronomy
Bond, H. E.		

**NAGW 593 University of North Carolina - Chapel Hill 4016**

Radon-222 tracing of biogenic gas fluxes from methane-saturated environments

Period	Obligations	
04/01/84-09/30/85	FY85: \$180,000	TOTAL: \$180,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Martens, C. S.	HQ-EB/Rambler, M. B.	39-Env Sci, NEC
	HQ-EB/Devincenzi, D. L.	

**NGT 34-003-800 University of North Carolina - Chapel Hill 4017**  
NASA graduate student researchers program

Period	Obligations	
05/17/82-11/16/84	FY85:	TOTAL: \$23,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Martens, C. S.	HQ-LB/Owens, F. C.	39-Env Sci, NEC

**NGT 34-003-801 University of North Carolina - Chapel Hill 4018**  
NASA graduate student researchers program

Period	Obligations	
04/15/83-04/14/85	FY85:	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Christiansen, W. A.	HQ-LB/Owens, F. C.	11-Astronomy

**NAG 1-535 University of North Carolina, Charlotte 4019**  
Dynamics and control of flexible spacecraft during slewing maneuvers

Period	Obligations	
11/01/84-10/31/86	FY85: \$59,984	TOTAL: \$59,984
Prin. Invest.	NASA Tech. Officer	CASE Category
Kakad, Y. P.	LARC/Armstrong, E. S.	45-Elec Engr
	LARC/Taylor, L. W.	

## NASA'S UNIVERSITY PROGRAM NORTH CAROLINA (Continued)

**NAG 3-609 University of North Carolina, Charlotte 4020**  
State estimation methodology for space power load management

Period	Obligations	
01/16/85-01/15/86	FY85: \$49,954	TOTAL: \$49,954
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lukic, V. P.	LERC/Schwarze, G. E.	45-Elec Engr
	LERC/Beach, R. F.	

**NAG 5-439 Bowling Green State University 4026**  
Time variability of emission line profiles in Seyfert I galaxies

Period	Obligations	
07/15/84-07/14/85	FY85:	TOTAL: \$2,225
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ptak, R.	GSFC/Kondo, Y.	11-Astronomy
Stoner, R.		

**NAS 2-10523 Wake Forest University 4021**  
Life science experiment ARC 781-127, correlation macro and microcirculatory alterations during weightlessness

Period	Obligations	
01/17/80-03/31/87	FY85: \$195,102	TOTAL: \$682,602
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hutchins, P. M.	ARC/Ferandin, J.	51-Biological Sci
	ARC/Sebesta, P. D.	

**NGT 36-002-800 Bowling Green State University 4027**  
NASA graduate student researchers program

Period	Obligations	
07/15/85-08/25/86	FY85: \$18,000	TOTAL: \$18,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Srinivasan, V.	HQ-LE/Owens, F. C.	12-Chemistry

**NCC 1-55 Wake Forest University 4022**  
Quantum chemical study of methane oxidation species

Period	Obligations	
06/04/81-06/17/86	FY85: \$22,809	TOTAL: \$87,728
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Jackels, C. F.	LARC/Phillips, D. H.	12-Chemistry
	LARC/Rogowski, R. S.	

**NAG 1-328 Case Western Reserve University 4028**  
Optimal measurement strategies for laser anemometers in wind tunnels

Period	Obligations	
02/09/83-09/30/85	FY85:	TOTAL: \$130,129
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Edwards, R. V.	LARC/Meyers, J. F., Jr.	49-Engr, NEC
	LARC/Hunter, W. W., Jr.	

**NAG 2-82 Case Western Reserve University 4029**  
Stabilizability and eigenvalue structure for linear systems representing the dynamics of twin-lift helicopter system

Period	Obligations	
01/01/81-08/31/85	FY85:	TOTAL: \$109,845
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Martin, C.	ARC/Cicolani, L. S.	49-Engr, NEC

## NORTH DAKOTA

**NAG 5-541 University of North Dakota 4023**  
Data processing and case study analysis of thunderstorm studies

Period	Obligations	
06/01/85-05/31/86	FY85: \$20,299	TOTAL: \$20,299
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Paellot, M. R.	GSFC/Heymsfield, G. M.	31-Atmos Sci
	GSFC/Adler, R. F.	

**NAG 2-339 Case Western Reserve University 4030**  
Studies of the prenatal and postnatal development and functional differentiation of the vestibular system in normal and centrifuged wistar rats and mice

Period	Obligations	
03/01/85-02/28/86	FY85: \$43,794	TOTAL: \$43,794
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Keefe, J. R.	ARC/Souza, K.	51-Biological Sci

**NAS 5-28159 University of North Dakota 4024**  
Micro-physical measurement support and remote sensing thunderstorms

Period	Obligations	
05/11/84-07/22/84	FY85:	TOTAL: \$21,499
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Paellot, M. R.	GSFC/Heymsfield, G. M.	31-Atmos Sci
	GSFC/Adler, R. F.	

**NAG 3-2 Case Western Reserve University 4031**  
Improved and efficient laser anemometers

Period	Obligations	
11/01/79-11/09/85	FY85: \$65,000	TOTAL: \$373,818
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Edwards, R. V.	LERC/Seasholtz, R. G.	45-Elec Engr

## OHIO

**NAG 5-331 Bowling Green State University 4025**  
Analysis of time variability emission lines in selected galaxies

Period	Obligations	
06/16/83-05/31/86	FY85: \$2,990	TOTAL: \$22,489
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stoner, R. E.	GSFC/Kondo, Y.	11-Astronomy
Ptak, R.		

**NAG 3-24 Case Western Reserve University 4032**  
Diamond II a resistivity, dielectric constant, and tangent delta from 10ghz-100ghz as well as thermal conductivity from OC to 500c

Period	Obligations	
01/07/80-01/02/85	FY85:	TOTAL: \$229,246
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hazon, D.	LERC/Kosmahl, H. G.	13-Physics
	LERC/Kavanagh, F. E.	

# **NASA'S UNIVERSITY PROGRAM** **OHIO (Continued)**

**NAG 3-30 Case Western Reserve University 4033**  
Influence of cobalt on the microstructure and mechanical properties of M-247

Period	Obligations	
01/28/80-01/26/84	FY85: TOTAL: \$81,408	
Prin. Invest.	NASA Tech. Officer	CASE Category
Ebert, L. J.	LERC/Gray, H. R.	47-Materials Engr

**NAG 3-223 Case Western Reserve University 4040**  
Fatigue crack and associated damage propagation a fundamental approach

Period	Obligations	
11/05/81-01/31/85	FY85: TOTAL: \$199,219	
Prin. Invest.	NASA Tech. Officer	CASE Category
Chudnovsky, A.	LERC/Gross, B.	47-Materials Engr
	LERC/Shannon, J. L., Jr.	

**NAG 3-61 Case Western Reserve University 4034**  
Model development for shock wave boundary layer interaction experiment

Period	Obligations	
04/24/80-10/20/85	FY85: \$17,591 TOTAL: \$155,741	
Prin. Invest.	NASA Tech. Officer	CASE Category
Caughey, D. A.	LERC/Hingst, W. R.	41-Aero Engr

**NAG 3-225 Case Western Reserve University 4041**  
Study of fast wave electron beam devices for millimeter wave generation

Period	Obligations	
10/20/81-02/28/85	FY85: TOTAL: \$97,477	
Prin. Invest.	NASA Tech. Officer	CASE Category
Ferendeci, A. M.	LERC/Stankiewicz, N.	45-Elec Engr
	LERC/Dayton, J. A.	

**NAG 3-97 Case Western Reserve University 4035**  
Mass and heat transfer characteristics of melt metals

Period	Obligations	
09/08/80-10/31/84	FY85: TOTAL: \$195,205	
Prin. Invest.	NASA Tech. Officer	CASE Category
Dybbbs, A.	LERC/Liebert, C. H.	46-Mech Engr

**NAG 3-230 Case Western Reserve University 4042**  
Boundary layer transition in a disturbed environment

Period	Obligations	
12/05/81-05/29/86	FY85: \$70,538 TOTAL: \$245,693	
Prin. Invest.	NASA Tech. Officer	CASE Category
Reshotko, E.	LERC/Van Fossen, G. J.	46-Mech Engr
	LERC/Simoneau, R. J.	

**NAG 3-102 Case Western Reserve University 4036**  
Experiments on viscous flows on supersonic streams in XI Lewis supersonic wind tunnel

Period	Obligations	
09/15/80-03/31/84	FY85: TOTAL: \$60,200	
Prin. Invest.	NASA Tech. Officer	CASE Category
Greber, I.	LERC/Hingst, W. R.	41-Aero Engr

**NAG 3-234 Case Western Reserve University 4043**  
Synthesis of soluble conducting polymers with reversible oxidation/reduction behavior

Period	Obligations	
11/30/81-04/04/85	FY85: TOTAL: \$205,805	
Prin. Invest.	NASA Tech. Officer	CASE Category
Litt, M. H.	LERC/Abbey, K. M.	12-Chemistry
	LERC/Sheibley, D. W.	

**NAG 3-163 Case Western Reserve University 4037**  
Developments of pressure modulator radiometer monomers and polymers: Improving performance of pressure modulator radiometer systems

Period	Obligations	
03/03/81-12/31/85	FY85: TOTAL: \$139,768	
Prin. Invest.	NASA Tech. Officer	CASE Category
Ritchey, W. M.	LERC/Serafini, T. T.	12-Chemistry
Sukenik, C. N.		

**NAG 3-247 Case Western Reserve University 4044**  
NASA graduate research fellowship program

Period	Obligations	
12/21/81-01/19/86	FY85: \$15,360 TOTAL: \$55,360	
Prin. Invest.	NASA Tech. Officer	CASE Category
Edwards, R. V.	LERC/Seasholtz, R. G.	49-Engr, NEC

**NAG 3-218 Case Western Reserve University 4038**  
Qualitative and quantitative study of fatigue damage in nickel

Period	Obligations	
12/05/81-12/28/85	FY85: \$14,708 TOTAL: \$204,736	
Prin. Invest.	NASA Tech. Officer	CASE Category
Welsch, G. E.	LERC/Miner, R. V.	47-Materials Engr
McGervey, J. D.	LERC/Hirschberg, M. H.	

**NAG 3-251 Case Western Reserve University 4045**  
Dilution jet experiments in compact combustor configurations

Period	Obligations	
01/05/82-01/30/86	FY85: \$7,500 TOTAL: \$170,870	
Prin. Invest.	NASA Tech. Officer	CASE Category
Greber, I.	LERC/Holdeman, J. D.	41-Aero Engr

**NAG 3-219 Case Western Reserve University 4039**  
Electrochemical studies of redox systems for energy storage

Period	Obligations	
12/05/81-12/02/85	FY85: TOTAL: \$263,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Yeager, E. B.	LERC/Reid, M. A.	12-Chemistry
Calvo, E. J.	LERC/Thaller, L. H.	
Tryk, D. A.		

**NAG 3-268 Case Western Reserve University 4046**  
Effect of reduction of strategic columbium addition in 718 alloy on the structure and properties

Period	Obligations	
03/20/82-01/31/85	FY85: TOTAL: \$120,519	
Prin. Invest.	NASA Tech. Officer	CASE Category
Wallace, J. F.	LERC/Dreshfield, R. L.	47-Materials Engr

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAG 3-270 Case Western Reserve University 4047**  
Interactive flowfield calculation in turbomachinery  
*Period Obligations*  
03/15/82-10/13/84 FY85: TOTAL: \$92,973  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Reshotko, E. LERC/Sockol, P. M. 41-Aero Engr  
LERC/Adamczyk, J. J.

**NAG 3-331 Case Western Reserve University 4054**  
Interactive dual-bearing/shaft finite elements for integrated engine structural analysis  
*Period Obligations*  
10/25/82-02/27/86 FY85: \$34,930 TOTAL: \$134,933  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Adams, M. L. LERC/Kielb, R. E. 41-Aero Engr  
Fertis, D. G. LERC/Johns, R. H.

**NAG 3-279 Case Western Reserve University 4048**  
Development of materials for resisto jet  
*Period Obligations*  
04/21/82-12/18/85 FY85: \$39,863 TOTAL: \$203,684  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hehemann, R. F. LERC/Marinos, C. 47-Materials Engr  
Welsch, G. LERC/Byers, D. C.  
Halloran, J. W.

**NAG 3-337 Case Western Reserve University 4055**  
Fundamental studies of mechanistic aspects of metal fatigue in the creep range  
*Period Obligations*  
10/30/82-10/27/85 FY85: \$60,000 TOTAL: \$220,445  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Manson, S. S. LERC/Halford, G. R. 47-Materials Engr  
LERC/Bill, R. C.

**NAG 3-287 Case Western Reserve University 4049**  
Bonding of ceramic seals to structural ceramics  
*Period Obligations*  
05/25/82-11/23/84 FY85: TOTAL: \$100,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Halloran, J. W. LERC/Kiraly, L. J. 47-Materials Engr  
Heuer, A. H. LERC/Cawley, J. D.

**NAG 3-341 Case Western Reserve University 4056**  
Molecular orbital studies inoxidation, sulfate formation and metal-metal oxide adhesion  
*Period Obligations*  
10/30/82-07/31/85 FY85: TOTAL: \$101,176  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Anderson, A. B. LERC/Fielder, W. L. 12-Chemistry  
LERC/Smialek, J. L.

**NAG 3-290 Case Western Reserve University 4050**  
Combustor flame flash backs  
*Period Obligations*  
05/25/82-01/31/85 FY85: TOTAL: \$87,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
T'ien, T. S. LERC/Anderson, D. N. 46-Mech Engr

**NAG 3-352 Case Western Reserve University 4057**  
Degradation mechanisms of materials for large space systems in low Earth orbit  
*Period Obligations*  
10/06/82-01/05/85 FY85: TOTAL: \$69,838  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Gordon, W. L. LERC/Purvis, C. K. 13-Physics  
Hoffman, R. W.

**NAG 3-291 Case Western Reserve University 4051**  
Mutual coupling effects in antenna arrays  
*Period Obligations*  
05/15/82-01/30/86 FY85: \$55,992 TOTAL: \$176,468  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Collins, R. E. LERC/Smetana, J. 45-Elec Engr

**NAG 3-369 Case Western Reserve University 4058**  
Analysis of transient behavior of rubbing components including phase transition and thermochemical effects  
*Period Obligations*  
12/05/82-01/03/85 FY85: TOTAL: \$70,888  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Mullen, R. L. LERC/McDonald, G. E. 46-Mech Engr

**NAG 3-301 Case Western Reserve University 4052**  
Formation of SiC by carbon ion implantation in silicon  
*Period Obligations*  
06/10/82-10/30/83 FY85: TOTAL: \$55,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Fung, C. D. LERC/Powell, J. A. 33-Oceanography

**NAG 3-387 Case Western Reserve University 4059**  
Alloying additions to Ne Ap and FE al for high temperature applications  
*Period Obligations*  
01/15/83-12/12/85 FY85: \$64,840 TOTAL: \$238,174  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Vedula, K. M. LERC/Titran, R. H. 47-Materials Engr  
Hehemann, R. F. LERC/Stephens, J. R.

**NAG 3-324 Case Western Reserve University 4053**  
Analysis of alumina scales on nicrail alloy  
*Period Obligations*  
09/01/82-08/31/84 FY85: TOTAL: \$41,180  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Halloran, J. W. LERC/Smialek, J. L. 47-Materials Engr  
Cooper, A. P.

**NAG 3-389 Case Western Reserve University 4060**  
Fellowship program to study sec processing techniques  
*Period Obligations*  
01/20/83-05/29/86 FY85: \$20,000 TOTAL: \$40,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Fung, C. D. LERC/Powell, J. A. 13-Physics

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAG 3-391 Case Western Reserve University 4061**  
 General purpose rotor torsional vibration computer code  

Period	Obligations
01/31/83-01/30/86	FY85: \$34,925 TOTAL: \$104,868
Prin. Invest.	NASA Tech. Officer CASE Category
Adams, M. L.	LERC/Kascak, A. F. 46-Mech Engr
	LERC/Fleming, D. P.

**NAG 3-396 Case Western Reserve University 4062**  
 Fracture mechanics study of high performance aircraft engine bearings  

Period	Obligations
02/15/83-02/12/86	FY85: \$74,076 TOTAL: \$220,214
Prin. Invest.	NASA Tech. Officer CASE Category
Mendelson, A.	LERC/Shannon, J. L., Jr. 46-Mech Engr

**NAG 3-406 Case Western Reserve University 4063**  
 Case early exposure to engineering for minority students and minority engineer industrial opportunity program  

Period	Obligations
03/25/83-03/22/86	FY85: \$30,500 TOTAL: \$54,500
Prin. Invest.	NASA Tech. Officer CASE Category
Boulding, M. E.	LERC/Agvilar, K. E. 49-Engr, NEC

**NAG 3-411 Case Western Reserve University 4064**  
 Oscillations in thermocapillary flows  

Period	Obligations
04/01/83-03/30/85	FY85: TOTAL: \$84,996
Prin. Invest.	NASA Tech. Officer CASE Category
Ostrach, S.	LERC/Carney, M. 19-Phys Sci, NEC
Kamotani, Y.	

**NAG 3-417 Case Western Reserve University 4065**  
 Solidification fundamentals  

Period	Obligations
03/10/83-01/03/86	FY85: \$284,000 TOTAL: \$468,980
Prin. Invest.	NASA Tech. Officer CASE Category
Laxmanan, V.	LERC/Gray, H. R. 47-Materials Engr
Wallace, J. F.	LERC/Kohl, F. J.

**NAG 3-426 Case Western Reserve University 4066**  
 A study of kapton degradation under simulated shuttle environment  

Period	Obligations
05/01/83-04/28/86	FY85: \$30,000 TOTAL: \$120,000
Prin. Invest.	NASA Tech. Officer CASE Category
Eck, T. G.	LERC/Ferguson, D. C. 13-Physics
Hoffman, R. W.	

**NAG 3-432 Case Western Reserve University 4067**  
 Solid state detectors for CARS combustion diagnostic instrumentation  

Period	Obligations
05/30/83-09/30/84	FY85: TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer CASE Category
Thompson, E. D.	LERC/Decker, A. J. 45-Elec Engr

**NAG 3-446 Case Western Reserve University 4068**  
 Polymer precursors for ceramic matrix composites  

Period	Obligations
10/15/83-11/13/85	FY85: \$100,689 TOTAL: \$175,709
Prin. Invest.	NASA Tech. Officer CASE Category
Litt, M.	LERC/Hurwitz, F. I. 47-Materials Engr
Halloran, J. W.	

**NAG 3-454 Case Western Reserve University 4069**  
 A graphics interface for control system analysis  

Period	Obligations
08/08/83-03/30/85	FY85: TOTAL: \$60,248
Prin. Invest.	NASA Tech. Officer CASE Category
Buchner, M.	LERC/Lehtinen, B. 49-Engr, NEC

**NAG 3-464 Case Western Reserve University 4070**  
 Mechanical behavior of carbon-carbon composites  

Period	Obligations
09/01/83-12/30/85	FY85: \$61,505 TOTAL: \$121,255
Prin. Invest.	NASA Tech. Officer CASE Category
Wallace, J. F.	LERC/Levine, S. R. 47-Materials Engr
	LERC/Ferrante, J.

**NAG 3-467 Case Western Reserve University 4071**  
 Study of combustion liner porous metal thermal barriers  

Period	Obligations
09/01/83-09/03/86	FY85: \$65,280 TOTAL: \$168,245
Prin. Invest.	NASA Tech. Officer CASE Category
Dybbbs, A.	LERC/Norgren, C. T. 46-Mech Engr
	LERC/Ercegovic, D.

**NAG 3-468 Case Western Reserve University 4072**  
 Stability and rheology of dispersions of silicon carbide and silicon nitride  

Period	Obligations
09/07/83-11/05/85	FY85: \$84,201 TOTAL: \$163,961
Prin. Invest.	NASA Tech. Officer CASE Category
Fekke, D. L.	LERC/Freedman, M. R.
	LERC/Herbell, T. P. 47-Materials Engr

**NAG 3-474 Case Western Reserve University 4073**  
 Work function measurements of tungsten and type m impregnated cathodes  

Period	Obligations
10/01/83-03/30/85	FY85: TOTAL: \$39,930
Prin. Invest.	NASA Tech. Officer CASE Category
Hoffman, R. W.	LERC/Forman, R. 19-Phys Sci, NEC

**NAG 3-480 Case Western Reserve University 4074**  
 Study of surface-tension driven convection under reduced gravity conditions  

Period	Obligations
10/15/83-10/14/84	FY85: TOTAL: \$29,905
Prin. Invest.	NASA Tech. Officer CASE Category
Ostrach, S.	LERC/Sarsfield, L. P. 49-Engr, NEC
Kamotani, T.	LERC/Chai, A. T.

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**NAG 3-482 Case Western Reserve University 4075**  
 Application of the method of pseudolinear equations to the Euler equations and the Navier Stokes equations  
*Period Obligations*  
 10/10/83-10/08/84 FY85: TOTAL: \$7,242  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lavery, J. E. LERC/Stubbs, R. M. 41-Aero Engr

**NAG 3-487 Case Western Reserve University 4076**  
 Analytic performance models for computer system  
*Period Obligations*  
 11/20/83-12/18/85 FY85: \$41,698 TOTAL: \$81,610  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jasiulek, J. N. LERC/Pelouch, J. J.  
 Woyczynski, W. A. LERC/Fair, G. 29-Math/Computer, NEC

**NAG 3-490 Case Western Reserve University 4077**  
 Ion implanted SiC junction and mos devices  
*Period Obligations*  
 10/31/83-10/30/85 FY85: \$45,000 TOTAL: \$118,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Fung, C. D. LERC/Powell, J. A. 13-Physics

**NAG 3-497 Case Western Reserve University 4078**  
 Drop tower experiments of thermocapillary convection  
*Period Obligations*  
 12/01/83-11/30/84 FY85: TOTAL: \$29,986  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Kamotani, T. LERC/Sarsfield, L. 49-Engr, NEC

**NAG 3-498 Case Western Reserve University 4079**  
 Growth and adherence of oxide film on Ni Al and Ni cr Al alloys  
*Period Obligations*  
 12/10/83-01/08/86 FY85: \$25,000 TOTAL: \$59,815  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Mitchell, T. E. LERC/Stearns, C. A. 47-Materials Engr  
 LERC/Smialek, J. L.

**NAG 3-505 Case Western Reserve University 4080**  
 Diamond like carbon coatings for electronic and optical applications  
*Period Obligations*  
 12/21/83-12/20/84 FY85: TOTAL: \$24,936  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Angus, J. C. LERC/Mirtich, M. J. 13-Physics  
 LERC/Banks, B. A.

**NAG 3-520 Case Western Reserve University 4081**  
 Experiments in viscous flows in supersonic streams in 1 x 1 Lewis supersonic wind tunnel  
*Period Obligations*  
 01/20/84-04/29/86 FY85: \$30,039 TOTAL: \$57,129  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Greber, I. LERC/Hingst, W. R. 41-Aero Engr

**NAG 3-553 Case Western Reserve University 4082**  
 Generalized cumulative damage assessment under complex loading, patterns and high temperatures  
*Period Obligations*  
 05/15/84-11/29/85 FY85: \$75,000 TOTAL: \$105,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Manson, S. S. LERC/Halford, G. R. 47-Materials Engr  
 LERC/Bill, R. C.

**NAG 3-554 Case Western Reserve University 4083**  
 Numerical calculations of viscous flows in curved ducts  
*Period Obligations*  
 04/30/84-10/29/85 FY85: \$29,843 TOTAL: \$86,213  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Reshotko, E. LERC/Sockol, P. M. 41-Aero Engr

**NAG 3-559 Case Western Reserve University 4084**  
 Space electric power system model-steady state and dynamic operation  
*Period Obligations*  
 06/01/84-10/01/84 FY85: TOTAL: \$3,200  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lukic, V. P. LERC/Beach, R. F. 45-Elec Engr

**NAG 3-563 Case Western Reserve University 4085**  
 Mechanical behavior of ordered feal alloys for potential sterling engine application  
*Period Obligations*  
 06/20/84-06/19/86 FY85: TOTAL: \$121,485  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Vedula, K. M. LERC/Nathal, M. V. 47-Materials Engr

**NAG 3-567 Case Western Reserve University 4086**  
 Thermo/diffuso capillary motion  
*Period Obligations*  
 07/27/84-12/15/85 FY85: \$13,112 TOTAL: \$62,216  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Kamotani, Y. LERC/Chai, A. T. 49-Engr, NEC

**NAG 3-570 Case Western Reserve University 4087**  
 Surface-tension driven convection under reduced gravity conditions  
*Period Obligations*  
 08/15/84-12/05/85 FY85: \$69,149 TOTAL: \$109,125  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Ostrach, S. LERC/Jacobson, T. P. 49-Engr, NEC  
 Kamotani, Y.

**NAG 3-572 Case Western Reserve University 4088**  
 Numerical model for transonic inlet rotor stages of axial flow compressors  
*Period Obligations*  
 09/25/84-10/24/85 FY85: TOTAL: \$27,138  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Prah, J. M. LERC/Strazisar, A. 41-Aero Engr  
 LERC/Wood, J. R.



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**NAG 3-585 Case Western Reserve University 4089**  
 Fatigue crack and associated damage propagation a fundamental approach  

Period	Obligations	
11/05/84-11/04/85	FY85: \$16,982	TOTAL: \$16,982
Prin. Invest.	NASA Tech. Officer	CASE Category
Chudnovsky, P. A.	LERC/Gross, B.	46-Mech Engr
Biröl, Y.	LERC/Orange, T.	

**NAG 3-612 Case Western Reserve University 4090**  
 Structure and stability of doped polymeric conductors  

Period	Obligations	
02/01/85-01/31/86	FY85: \$12,835	TOTAL: \$12,835
Prin. Invest.	NASA Tech. Officer	CASE Category
Taylor, P. L.	LERC/Good, B.	45-Elec Engr

**NAG 3-625 Case Western Reserve University 4091**  
 Application of the method of headliner equations  

Period	Obligations	
03/07/85-12/07/85	FY85: \$9,211	TOTAL: \$9,211
Prin. Invest.	NASA Tech. Officer	CASE Category
Lavery, J.	LERC/Sockol, P. M.	41-Aero Engr

**NAG 3-640 Case Western Reserve University 4092**  
 Receptivity in liquid jets and other flows  

Period	Obligations	
06/01/85-05/31/86	FY85: \$63,111	TOTAL: \$63,111
Prin. Invest.	NASA Tech. Officer	CASE Category
Reshotko, E.	LERC/Goldstein, M. E.	13-Physics
Leib, S. J.		

**NAG 3-648 Case Western Reserve University 4093**  
 Lifting surface theory for propellers configurations  

Period	Obligations	
07/15/85-10/15/85	FY85: \$20,000	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ramachandra, S. M.	LERC/Bober, L. J.	41-Aero Engr

**NAG 3-653 Case Western Reserve University 4094**  
 Finite element analysis of thermomechanical response for a spray clutch assembly  

Period	Obligations	
09/01/85-08/31/86	FY85: \$49,841	TOTAL: \$49,841
Prin. Invest.	NASA Tech. Officer	CASE Category
Mullen, R. L.	LERC/Kascak, A. F.	46-Mech Engr
	LERC/Fleming, D. P.	

**NAG 3-659 Case Western Reserve University 4095**  
 Methodology for the design of computer systems in integrated flight control applications  

Period	Obligations	
09/20/85-09/19/86	FY85: \$54,363	TOTAL: \$54,363
Prin. Invest.	NASA Tech. Officer	CASE Category
Buchner, M.	LERC/Delaat, J. C.	41-Aero Engr

**NAGW 83 Case Western Reserve University 4096**  
 Prenatal and postnatal development and functional differentiation of the vestibular system in normal, rotated and centrifuged rats and mice  

Period	Obligations	
07/01/80-02/28/85	FY85:	TOTAL: \$164,426
Prin. Invest.	NASA Tech. Officer	CASE Category
Keefe, J. R.	HQ-EB/Halstead, T. W.	51-Biological Sci

**NAGW 451 Case Western Reserve University 4097**  
 Gamtrac telescope improved angular resolution for gamma ray astronomy  

Period	Obligations	
04/01/83-01/31/86	FY85: \$150,000	TOTAL: \$407,140
Prin. Invest.	NASA Tech. Officer	CASE Category
Frye, G. M., Jr.	HQ-EZ/Cline, T. L.	11-Astronomy
Jenkins, F. L.	HQ-EZ/Kaluzienski, L. J.	

**NAS 3-23683 Case Western Reserve University 4098**  
 Photoelastic studies of hertz and crack stress fields  

Period	Obligations	
10/07/82-01/15/84	FY85:	TOTAL: \$20,780
Prin. Invest.	NASA Tech. Officer	CASE Category
Wright, D. K., Jr.	LERC/Shannon, J. L., Jr.	49-Engr, NEC

**NAS 9-17439 Case Western Reserve University 4099**  
 Quantitation of effects of gravity upon human vertical vestibular and optokinetic responses  

Period	Obligations	
08/01/85-08/01/88	FY85: \$42,915	TOTAL: \$42,915
Prin. Invest.	NASA Tech. Officer	CASE Category
Leigh, R. J.	JSC/Harris, J. W.	56-Medical Sciences

**NCC 3-25 Case Western Reserve University 4100**  
 Theoretical studies of the transport properties in selectivity doper III V semiconducting heterostructures  

Period	Obligations	
03/07/83-01/06/86	FY85:	TOTAL: \$65,942
Prin. Invest.	NASA Tech. Officer	CASE Category
Segall, B.	LERC/Haugland, E.	13-Physics
	LERC/Connolly, D. J.	

**NCC 3-29 Case Western Reserve University 4101**  
 Microwave and millimeter wave active and passive circuit modeling design, and testing  

Period	Obligations	
07/01/83-10/29/85	FY85: \$70,692	TOTAL: \$151,801
Prin. Invest.	NASA Tech. Officer	CASE Category
Collin, R. E.	LERC/Downey, A.	45-Elec Engr

**NCC 3-30 Case Western Reserve University 4102**  
 Transient elastohydrodynamic lubrication in starved conjunctions  

Period	Obligations	
05/15/83-02/13/86	FY85: \$182,375	TOTAL: \$251,875
Prin. Invest.	NASA Tech. Officer	CASE Category
Prahl, J. M.	LERC/Hamrock, B. J.	46-Mech Engr
Jeng, J. R.	LERC/Loomis, W. R.	

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**NCC 3-40 Case Western Reserve University 4103**  
Study of electron beam lithography  
*Period Obligations*  
09/01/84-08/30/86 FY85: \$24,393 TOTAL: \$46,023  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Gordon, W. L. LERC/Connolly, D. J. 45-Elec Engr  
LERC/Williams, W. D.

**NCC 3-42 Case Western Reserve University 4104**  
Case/NASA cooperative aerospace R and D fellowship program  
*Period Obligations*  
06/01/84-12/30/85 FY85: \$336,365 TOTAL: \$627,425  
*Prin. Invest. NASA Tech. Officer CASE Category*  
McKeon, T. J. LERC/Montegani, F. J. 49-Engr, NEC

**NCC 3-43 Case Western Reserve University 4105**  
Environmental degradation of combustion turbine hot-section materials  
*Period Obligations*  
07/15/84-10/31/85 FY85: \$79,991 TOTAL: \$96,498  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Mitchell, T. E. LERC/Stearns, C. A. 19-Phys Sci, NEC

**NCC 3-45 Case Western Reserve University 4106**  
Combustion turbine engine hot section deposition prediction and measurement  
*Period Obligations*  
10/20/84-10/18/86 FY85: \$185,440 TOTAL: \$185,440  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Dybbbs, A. LERC/Stearns, C. A. 19-Phys Sci, NEC  
LERC/Santoro, G. J.

**NGT 36-027-011 Case Western Reserve University 4107**  
Summer program of NASA-ASEE summer faculty fellowships  
*Period Obligations*  
12/16/69-03/31/86 FY85: \$398,200 TOTAL: \$3,444,815  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Prahl, J. M. HQ-LB/Owens, F. C. 49-Engr, NEC

**NGT 36-027-800 Case Western Reserve University 4108**  
NASA graduate student researchers program  
*Period Obligations*  
05/01/83-04/30/85 FY85: TOTAL: \$28,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Liu, C. C. HQ-LB/Owens, F. C. 43-Chem Engr

**NGT 36-027-801 Case Western Reserve University 4109**  
NASA graduate student researchers program  
*Period Obligations*  
06/01/83-05/31/86 FY85: \$15,320 TOTAL: \$39,960  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Taylor, P. HQ-LB/Owens, F. C. 13-Physics

**NGT 36-027-802 Case Western Reserve University 4110**  
NASA graduate student researchers program  
*Period Obligations*  
09/01/84-08/30/85 FY85: TOTAL: \$12,810  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Edwards, R. V. HQ-LB/Owens, F. C. 43-Chem Engr

**NGT 36-027-803 Case Western Reserve University 4111**  
NASA graduate student researchers program  
*Period Obligations*  
09/01/84-08/31/86 FY85: \$18,000 TOTAL: \$28,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Adams, M. HQ-LB/Owens, F. C. 46-Mech Engr

**NGT 36-027-804 Case Western Reserve University 4112**  
NASA graduate student researchers program  
*Period Obligations*  
09/15/84-09/14/85 FY85: \$12,000 TOTAL: \$12,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Huckelbridge, A. A. HQ-LB/Owens, F. C. 44-Civil Engr

**NGT 36-027-805 Case Western Reserve University 4113**  
NASA graduate student researchers program  
*Period Obligations*  
07/01/85-06/30/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Tien, J. S. HQ-LE/Owens, F. C. 41-Aero Engr

**NGT 36-027-806 Case Western Reserve University 4114**  
NASA graduate student researchers program  
*Period Obligations*  
06/01/85-05/31/86 FY85: \$17,000 TOTAL: \$17,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Feke, D. L. HQ-LE/Owens, F. C. 43-Chem Engr

**NGT 36-027-807 Case Western Reserve University 4115**  
NASA graduate student researchers program  
*Period Obligations*  
09/15/85-09/14/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Mitchell, T. E. HQ-LE/Owens, F. C. 47-Materials Engr

**NGT 36-027-808 Case Western Reserve University 4116**  
NASA graduate student researchers program  
*Period Obligations*  
09/15/85-09/14/86 FY85: \$15,000 TOTAL: \$15,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Liu, C. C. HQ-LE/Owens, F. C. 43-Chem Engr

**NSG 3197 Case Western Reserve University 4117**  
Secondary electron emission yield  
*Period Obligations*  
07/01/78-11/26/85 FY85: \$59,980 TOTAL: \$380,502  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Gordan, W. L. LERC/Staskus, J. V. 13-Physics  
Hoffman, R. W. LERC/Purvis, C. K.

**NSG 3246 Case Western Reserve University 4118**  
Anisotropy of directionally solidified nickel base superalloy monocrystals  
*Period Obligations*  
06/15/79-06/30/84 FY85: TOTAL: \$73,495  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ebert, L. J. LERC/Gray, H. R. 47-Materials Engr

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**NAG 3-138 Cleveland State University 4119**  
NASA-Cleveland State University internship program  
*Period Obligations*  
12/15/80-11/13/85 FY85: \$4,666 TOTAL: \$69,075  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Goradia, C. LERC/Weinberg, I. 13-Physics  
Goradia, M. G. LERC/Swartz, C. K.

**NAG 3-156 Cleveland State University 4120**  
Interference between analog and digital methods of modulation of television signals  
*Period Obligations*  
01/09/81-12/31/84 FY85: TOTAL: \$246,890  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Groumpos, P. P. LERC/Whyte, W. A. 45-Elec Engr  
LERC/Miller, E. F.

**NAG 3-241 Cleveland State University 4121**  
Effect of heat treatment of electrical contacts to gallium arsenide  
*Period Obligations*  
12/15/81-10/30/85 FY85: \$5,924 TOTAL: \$44,189  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Goradia, M. G. LERC/Flood, D. J. 45-Elec Engr  
LERC/Brinker, D. J.

**NAG 3-249 Cleveland State University 4122**  
Theory of gallium arsenide solar cells with sunlight concentration up to 100X  
*Period Obligations*  
01/04/82-10/22/85 FY85: \$16,566 TOTAL: \$80,021  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Goradia, C. LERC/Brinker, D. J. 45-Elec Engr

**NAG 3-254 Cleveland State University 4123**  
Study and implementation of LERC lab wide protocol for the cable television data network  
*Period Obligations*  
02/01/82-12/20/85 FY85: \$20,000 TOTAL: \$116,280  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Megargle, R. LERC/Schulte, R. R. 22-Computer Science  
Bockhoff, F. LERC/Pillay, S. K.

**NAG 3-315 Cleveland State University 4124**  
Investigation of experimental techniques to detect, locate and quantify gear noise in helicopter transmissions  
*Period Obligations*  
07/31/82-03/30/86 FY85: \$24,999 TOTAL: \$178,044  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Flanagan, P. M. LERC/Lewicki, D. G. 46-Mech Engr  
Atherton, W. J.

**NAG 3-338 Cleveland State University 4125**  
CSU-NASA graduate internship in thermophoto voltaics  
*Period Obligations*  
09/22/82-03/21/85 FY85: TOTAL: \$23,927  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Piszcior, M. F., Jr. LERC/Bercaw, R. W. 45-Elec Engr  
Goradia, M. LERC/Sater, B. L.

**NAG 3-339 Cleveland State University 4126**  
Conjugate gradient procedures for turbomachinery applications  
*Period Obligations*  
10/01/82-03/27/86 FY85: \$37,106 TOTAL: \$105,535  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Chang, S. H. LERC/Johnson, G. M. 41-Aero Engr  
LERC/Sockol, P. M.

**NAG 3-372 Cleveland State University 4127**  
A theoretical study of high current density cathode systems  
*Period Obligations*  
01/01/83-09/30/85 FY85: TOTAL: \$55,309  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Schlosser, H. LERC/Wintucky, E. G. 13-Physics

**NAG 3-375 Cleveland State University 4128**  
A cooperative research program concerning structural dynamics of the spin rig rotor blade assy  
*Period Obligations*  
12/01/82-02/27/86 FY85: \$12,452 TOTAL: \$58,781  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Bellini, P. X. LERC/Brown, G. V. 46-Mech Engr

**NAG 3-471 Cleveland State University 4129**  
Investigation into planetary ring gears  
*Period Obligations*  
09/15/83-12/30/85 FY85: \$26,000 TOTAL: \$80,962  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Frater, J. L. LERC/Oswald, F. B. 46-Mech Engr  
Kasuba, R.

**NAG 3-483 Cleveland State University 4130**  
Unsteady flow analysis of advanced propellers  
*Period Obligations*  
10/15/83-12/31/84 FY85: TOTAL: \$62,553  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ghorashi, A. LERC/Snyder, A. 41-Aero Engr

**NAG 3-518 Cleveland State University 4131**  
Alternative system architectures and parameters for a space power system  
*Period Obligations*  
01/15/84-01/14/85 FY85: TOTAL: \$45,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Villasaca, F. E. LERC/Gourash, F. 45-Elec Engr  
Groumpos, P. P.

**NAG 3-547 Cleveland State University 4132**  
Development of guidelines for spacecraft electrical power systems  
*Period Obligations*  
04/15/84-01/14/85 FY85: TOTAL: \$31,370  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Maisel, J. LERC/Sundberg, G. R. 45-Elec Engr

**NAG 3-548 Cleveland State University 4133**  
Unsteady flow and heat transfer in turbomachinery  
*Period Obligations*  
04/15/84-06/13/86 FY85: \$87,176 TOTAL: \$160,113  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Gorla, R. S. LERC/Rice, E. J. 41-Aero Engr

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAG 3-550 Cleveland State University 4134**  
 Development and computer implementation of design/analysis techniques for multilayered composite structures  
*Period Obligations*  
 09/01/84-12/01/85 FY85: \$74,000 TOTAL: \$93,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bellini, P. LERC/Chamis, C. C. 41-Aero Engr  
 LERC/Johns, R. H.

**NAG 3-573 Cleveland State University 4135**  
 NASA-CSU internship in compound semiconductor solar cell  
*Period Obligations*  
 10/10/84-11/09/86 FY85: \$18,992 TOTAL: \$18,992  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Goradia, C. LERC/Brinker, D. J. 45-Elec Engr  
 LERC/Flood, D. J.

**NAG 3-644 Cleveland State University 4136**  
 Artificial intelligence procedures for design analysis of structural systems  
*Period Obligations*  
 07/01/85-06/30/86 FY85: \$50,000 TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bellini, P. X. LERC/Chamis, C. C. 41-Aero Engr

**NCC 3-6 Cleveland State University 4137**  
 Power train development/analysis large scale wind turbine supporting research and technology program  
*Period Obligations*  
 02/15/80-12/31/85 FY85: TOTAL: \$641,950  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Kasuba, R. LERC/Miller, D. R. 46-Mech Engr  
 Pintz, A.

**NCC 3-16 Cleveland State University 4138**  
 Experimental and analytical investigations of characteristics of stand alone solar photovoltaic energy systems and components  
*Period Obligations*  
 10/13/80-09/30/86 FY85: TOTAL: \$579,217  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Chang, G. C. LERC/Fordyce, J. S. 45-Elec Engr  
 Groumpos, P. P.

**NCC 3-17 Cleveland State University 4139**  
 Computerized mathematical model for optimizing cost and electric output of phosphoric acid fuel cells  
*Period Obligations*  
 03/09/81-11/19/87 FY85: \$102,580 TOTAL: \$290,630  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Alkasab, K. A. LERC/Presler, A. F. 46-Mech Engr

**NCC 3-19 Cleveland State University 4140**  
 Terrestrial space energetics and power systems  
*Period Obligations*  
 09/01/82-03/31/86 FY85: \$29,481 TOTAL: \$191,693  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hambourger, P. D. LERC/Rutledge, S. K. 43-Chem Engr  
 Shah, D. B. LERC/Banks, B. A.

**NCC 3-20 Cleveland State University 4141**  
 Internship program in digital communications technology  
*Period Obligations*  
 09/01/82-06/30/85 FY85: TOTAL: \$51,089  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Groumpos, P. P. LERC/Connolly, D. J. 45-Elec Engr

**NCC 3-21 Cleveland State University 4142**  
 Interaction of lubricants and lubricant additives with solid surfaces and the ambient atmosphere  
*Period Obligations*  
 10/06/82-06/30/85 FY85: TOTAL: \$235,203  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Gorla, R. S. LERC/Loomis, W. R. 49-Engr, NEC  
 LERC/Buckley, D. H.

**NCC 3-23 Cleveland State University 4143**  
 Phosphoric-acid fuel cell technology development  
*Period Obligations*  
 11/22/82-12/19/85 FY85: \$202,369 TOTAL: \$519,384  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Coulman, G. LERC/Wagner, R. F. 43-Chem Engr  
 Wotzak, G. P.  
 Alkasab, K.

**NCC 3-24 Cleveland State University 4144**  
 Detection and characterization of flows in ceramic materials  
*Period Obligations*  
 02/15/83-02/12/86 FY85: \$50,300 TOTAL: \$141,432  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hemann, J. H. LERC/Klima, S. J. 47-Materials Engr  
 Baakini, G. Y.

**NCC 3-27 Cleveland State University 4145**  
 Mechanical behavior of thermal barrier coatings for gas turbine blades  
*Period Obligations*  
 07/01/83-10/31/86 FY85: \$96,979 TOTAL: \$221,890  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Nixon, D. A. LERC/Miller, R. A. 47-Materials Engr  
 Glassman, T. G.

**NCC 3-41 Cleveland State University 4146**  
 Development of experimental capability for microgravity material science  
*Period Obligations*  
 04/25/84-04/24/87 FY85: TOTAL: \$261,574  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Kramerich, G. L. LERC/Davies, R. L. 29-Math/Computer, NEC

**NCC 3-46 Cleveland State University 4147**  
 Modelling of high temperature fracture and fatigue processes  
*Period Obligations*  
 02/28/85-02/27/86 FY85: \$71,280 TOTAL: \$71,280  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hemann, J. LERC/Orange, T. W. 47-Materials Engr  
 LERC/Halford, G. R.

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OHIO (Continued)**

**NCC 3-50 Cleveland State University 4148**  
Engineering analysis of the space station dynamic power system  
*Period Obligations*  
05/01/85-04/30/86 FY85: \$62,273 TOTAL: \$62,273  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Evans, A. L. LERC/Neely, G. M. 46-Mech Engr

**NAG 3-313 Cuyahoga Community College 4149**  
Pre-engineering program  
*Period Obligations*  
09/01/82-08/29/86 FY85: \$25,306 TOTAL: \$66,556  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Serna, A. LERC/Aguilar, K. E. 49-Engr, NEC  
Candelario, A. R.

**NAG 3-366 John Carroll University 4150**  
Studies of optical sensor and signal processing systems  
*Period Obligations*  
11/08/82-11/05/85 FY85: TOTAL: \$140,705  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Carome, E. LERC/Baumbick, R. J. 49-Engr, NEC  
Adamousky, G. LERC/Sellers, J. F.

**NAG 3-509 John Carroll University 4151**  
Studies of intensity-type optical fiber sensors  
*Period Obligations*  
12/30/83-09/29/85 FY85: TOTAL: \$57,730  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Carome, E. F. LERC/Baumbick, R. J. 13-Physics  
Keszenheimer, J.

**NAG 3-571 John Carroll University 4152**  
Optical sensors for use in propulsion systems  
*Period Obligations*  
10/01/84-01/31/86 FY85: TOTAL: \$26,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Fritsch, K. LERC/Baumbick, R. J. 45-Elec Engr

**NAG 1-341 Kent State University 4153**  
Robot environment expert system  
*Period Obligations*  
03/01/83-05/31/84 FY85: TOTAL: \$31,479  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Potter, J. L. LARC/Orlando, N. E. 22-Computer Science  
LARC/Hankins, W. W.

**NAG 3-298 Kent State University 4154**  
Finite elements generation using vaxima  
*Period Obligations*  
06/30/82-10/14/85 FY85: \$59,940 TOTAL: \$199,572  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wang, P. S. LERC/Chamis, C. C. 21-Mathematics  
LERC/Hirschbein, M. S.

**NAGW 368 Kenyon College 4155**  
Regulation of differential growth in root gravitropism  
*Period Obligations*  
09/01/82-09/30/85 FY85: \$39,167 TOTAL: \$100,864  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Edwards, K. L. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAS 9-14538 Miami University 4156**  
Research on a possible mechanism of O-G sickness  
*Period Obligations*  
02/15/75-06/01/85 FY85: TOTAL: \$325,572  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Parker, D. E. JSC/Homick, J. L. 59-Life Sci, NEC  
JSC/Reschke, M. F.

**NAS 9-17413 Miami University 4157**  
Research on mechanisms of space motion sickness  
*Period Obligations*  
05/01/85-05/01/86 FY85: \$109,861 TOTAL: \$109,861  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Parker, D. E. JSC/Reschke, M. F. 51-Biological Sci

**NCC 1-12 Miami University 4158**  
Basic research on radiation induced lasers  
*Period Obligations*  
05/15/79-11/30/85 FY85: \$69,372 TOTAL: \$379,145  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wells, W. E. LARC/Deyoung, R. J. 13-Physics  
LARC/Conway, E. J.

**NAG 1-333 Ohio State University 4159**  
Basic electromagnetic scattering studies  
*Period Obligations*  
02/08/83-05/07/84 FY85: TOTAL: \$149,971  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Burnside, W. D. LARC/Gilreath, M. C. 45-Elec Engr  
LARC/Small, W. J.

**NAG 1-342 Ohio State University 4160**  
Role of airfoil geometry in minimizing the effect of insect contamination of laminar flow sections  
*Period Obligations*  
03/01/83-12/31/84 FY85: TOTAL: \$34,405  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Bragg, M. B. LARC/Holmes, B. J. 41-Aero Engr

**NAG 2-195 Ohio State University 4161**  
Discrete control modelling of computer-aided control of strongly interactive systems  
*Period Obligations*  
08/01/82-12/31/85 FY85: \$79,128 TOTAL: \$250,614  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Miller, R. A. ARC/Hartzell, E. J. 69-Psych, NEC  
Jagacinski, R. J.

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**OHIO (Continued)**

**NAG 2-281** **Ohio State University** **4162**  
Analysis of helicopter rotor airfoils  
*Period* *Obligations*  
03/01/84-08/31/84 FY85: TOTAL: \$35,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lee, J. ARC/Hicks, R. M. 41-Aero Engr  
Gregorek, G. M.

**NAG 2-299** **Ohio State University** **4163**  
Analysis of advanced transonic airfoils  
*Period* *Obligations*  
06/01/84-01/31/85 FY85: TOTAL: \$70,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lee, J. D. ARC/Hicks, R. M. 41-Aero Engr

**NAG 2-354** **Ohio State University** **4164**  
Analysis of a high-lift transonic airfoil  
*Period* *Obligations*  
06/01/85-09/30/85 FY85: \$14,999 TOTAL: \$14,999  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gregorek, G. M. ARC/Hicks, R. M. 41-Aero Engr

**NAG 3-28** **Ohio State University** **4165**  
Effects of ice formation on 2D aerodynamic shapes  
*Period* *Obligations*  
02/01/80-11/15/85 FY85: \$77,719 TOTAL: \$491,143  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gregorek, G. M. LERC/Shaw, R. J. 41-Aero Engr  
Bragg, M. B.

**NAG 3-159** **Ohio State University** **4166**  
Engineering calculations for communications satellite systems planning  
*Period* *Obligations*  
01/20/81-03/12/86 FY85: \$80,000 TOTAL: \$449,339  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lewis, C. A. LERC/Miller, E. F. 45-Elec Engr  
Reilly, C. H. LERC/Cauley, M. A.

**NAG 3-330** **Ohio State University** **4167**  
Tailored airfoils for wind turbine applications  
*Period* *Obligations*  
09/15/82-01/30/86 FY85: \$100,118 TOTAL: \$365,011  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gregorek, G. M. LERC/Savino, J. M. 42-Astro Engr  
Lee, J. D.

**NAG 3-374** **Ohio State University** **4168**  
Documentation of ice shapes for the helicopter icing flight test program  
*Period* *Obligations*  
11/29/82-11/01/85 FY85: \$48,915 TOTAL: \$308,899  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lee, J. D. LERC/Shaw, R. J. 41-Aero Engr  
LERC/Richter, G. P.

**NAG 3-424** **Ohio State University** **4169**  
Study of internal distributed damping for vibrating turbomachinery blades  
*Period* *Obligations*  
04/15/83-04/15/85 FY85: TOTAL: \$59,948  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Leissa, A. W. LERC/Brown, G. V. 41-Aero Engr

**NAG 3-448** **Ohio State University** **4170**  
Feasibility study on diffusion bonding in GaAs solar cell fabrication  
*Period* *Obligations*  
06/27/83-09/30/85 FY85: TOTAL: \$61,779  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Albright, C. E. LERC/Bozek, J. 47-Materials Engr  
Gangl, K. J. LERC/Forestieri, A.

**NAG 3-476** **Ohio State University** **4171**  
Analysis of electromagnetic scattering  
*Period* *Obligations*  
09/25/83-02/11/86 FY85: \$74,569 TOTAL: \$149,567  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Pathak, P. H. LERC/Rice, E. J. 45-Elec Engr  
Chuang, C.

**NAG 3-536** **Ohio State University** **4172**  
Adaptive arrays for satellite communications  
*Period* *Obligations*  
03/13/84-11/15/85 FY85: TOTAL: \$99,673  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ksienski, A. A. LERC/Acosta, R. 45-Elec Engr  
Gupta, I. J. LERC/Miller, E. F.

**NAG 3-541** **Ohio State University** **4173**  
The design and analysis of single flank transmission error tester for loaded gears  
*Period* *Obligations*  
04/01/84-07/31/85 FY85: TOTAL: \$30,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Houser, D. R. LERC/Coy, J. J. 46-Mech Engr  
LERC/Oswald, F. B.

**NAG 5-52** **Ohio State University** **4174**  
Ultraviolet studies of later type beryllium stars  
*Period* *Obligations*  
05/15/80-08/31/85 FY85: TOTAL: \$20,165  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Slettebak, A. GSFC/Kondo, Y. 11-Astronomy

**NAG 5-519** **Ohio State University** **4175**  
Development of imposed gravity field estimates using existing altimeter data  
*Period* *Obligations*  
04/01/85-03/31/86 FY85: \$21,875 TOTAL: \$21,875  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rapp, R. H. GSFC/Christodoulidis, D. C.  
Engelis, T. L. GSFC/Marsh, J. G. 19-Phys Sci, NEC

# **NASA'S UNIVERSITY PROGRAM** **OHIO (Continued)**

**NAG 5-573** **Ohio State University** **4176**  
Emission line region kinematics in selected Seyfert galaxies

Period	Obligations	
07/01/85-06/30/86	FY85: \$12,200	TOTAL: \$12,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Ferland, G. J.	GSFC/Kondo, Y.	11-Astronomy

**NAG 8-483** **Ohio State University** **4177**  
Theoretical studies of the surface tension of liquid metal systems

Period	Obligations	
07/01/84-06/30/86	FY85: \$57,000	TOTAL: \$109,909
Prin. Invest.	NASA Tech. Officer	CASE Category
Stroud, D. G.	MSFC/Yates, I. C.	47-Materials Engr

**NAGW 297** **Ohio State University** **4178**  
The role of acid and calcium gradients in gravitropism

Period	Obligations	
03/01/82-02/28/86	FY85: \$94,925	TOTAL: \$181,803
Prin. Invest.	NASA Tech. Officer	CASE Category
Vans, M. E.	HQ-EB/Halstead, T. W.	51-Biological Sci

**NAGW 625** **Ohio State University** **4179**  
The role of gravity in apical dominance

Period	Obligations	
04/01/84-04/30/86	FY85: \$34,000	TOTAL: \$68,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Cline, M.	HQ-EB/Halstead, T. W.	51-Biological Sci

**NAGW 750** **Ohio State University** **4180**  
Search for extraterrestrial life research (SETI)

Period	Obligations	
05/01/85-01/31/86	FY85: \$11,334	TOTAL: \$11,334
Prin. Invest.	NASA Tech. Officer	CASE Category
Kraus, J. D.	HQ-EB/Devincenzi, D. L.	99-Multi-Discip
Dixon, R. S.	HQ-EB/Rambler, M. B.	

**NAGW 780** **Ohio State University** **4181**  
Cellular polarity and interactions in plant graviperception

Period	Obligations	
07/15/85-12/15/85	FY85: \$25,000	TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Sack, F. D.	HQ-EB/Halstead, T. W.	54-Env Biology

**NAS 1-17450** **Ohio State University** **4182**  
Analysis of large aperture reflector antennas

Period	Obligations	
07/18/83-10/02/85	FY85: \$40,000	TOTAL: \$150,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Rudduck, C.	LARC/Beck, F. B.	45-Elec Engr
	LARC/Bailey, M. C.	

**NAS 8-35595** **Ohio State University** **4183**  
Development of a coaxial viewing and vision system for gas tungsten arc welding

Period	Obligations	
12/01/83-12/30/85	FY85: \$105,060	TOTAL: \$295,316
Prin. Invest.	NASA Tech. Officer	CASE Category
Richardson, R. W.	MSFC/Jones, C. S.	49-Engr, NEC
	MSFC/Wilson, W. A.	

**NCC 2-206** **Ohio State University** **4184**  
The effects of fatigue on cockpit communication and resource management

Period	Obligations	
08/01/82-08/31/85	FY85: TOTAL: \$118,457	
Prin. Invest.	NASA Tech. Officer	CASE Category
Jensen, R.	ARC/Foushee, H. C.	62-Social Aspects
Lerch, A.	ARC/Lauber, J. K.	
Rings, G.		

**NGR 36-008-161** **Ohio State University** **4185**  
The direct combination of satellite and gravity data

Period	Obligations	
05/01/71-07/31/86	FY85: \$44,966	TOTAL: \$495,224
Prin. Invest.	NASA Tech. Officer	CASE Category
Rapp, R. H.	GSFC/Welker, J.	32-Geological Sci

**NGT 36-020-800** **Ohio State University** **4186**  
NASA graduate student researchers program

Period	Obligations	
06/01/85-05/31/86	FY85: \$15,700	TOTAL: \$15,700
Prin. Invest.	NASA Tech. Officer	CASE Category
Evans, M. L.	HQ-LE/Owens, F. C.	51-Biological Sci

**NSG 1498** **Ohio State University** **4187**  
Analysis of airborne antenna patterns

Period	Obligations	
01/16/78-01/31/86	FY85: \$89,925	TOTAL: \$489,247
Prin. Invest.	NASA Tech. Officer	CASE Category
Burnside, W. D.	LARC/Gilreath, M. C.	45-Elec Engr
	LARC/Cockrell, C. R.	

**NSG 1613** **Ohio State University** **4188**  
Radar cross section studies

Period	Obligations	
05/01/79-04/30/86	FY85: \$639,833	TOTAL: \$1,766,198
Prin. Invest.	NASA Tech. Officer	CASE Category
Burnside, W. D.	LARC/Gilreath, M. C.	45-Elec Engr
Peters, L., Jr.		

**NSG 2162** **Ohio State University** **4189**  
Electronic search technology applicable to the search for extraterrestrial intelligence problem

Period	Obligations	
06/01/76-07/31/85	FY85: TOTAL: \$95,181	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kraus, J. D.	ARC/Wolfe, J. H.	45-Elec Engr
Dixon, R. S.	ARC/Billingham, J.	

**NSG 3302** **Ohio State University** **4190**  
The application of optical computing techniques to jet engine controls

Period	Obligations	
08/01/79-07/30/86	FY85: \$25,000	TOTAL: \$450,897
Prin. Invest.	NASA Tech. Officer	CASE Category
Collins, S. A., Jr.	LERC/Baumbick, R. J.	13-Physics
	LERC/Sellers, J. F.	

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**NSG 5265** **Ohio State University** **4191**  
Basic research for the Earth dynamics program  
*Period* *Obligations*  
04/01/78-06/30/86 FY85: \$60,000 TOTAL: \$501,217  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mueller, I. I. GSFC/Welker, J. 32-Geological Sci  
Uotila, U. A. GSFC/Smith, D. E.

**NSG 5368** **Ohio State University** **4192**  
Research of binary systems and composite sources involving cool and hot components  
*Period* *Obligations*  
06/01/79-11/30/85 FY85: TOTAL: \$50,240  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wing, R. F. GSFC/Kondo, Y. 11-Astronomy  
Stencel, R. E.

**NSG 7479** **Ohio State University** **4193**  
Investigation of infrared spectra of atmospheric gases to support stratospheric spectroscopic observations  
*Period* *Obligations*  
11/01/78-10/31/84 FY85: TOTAL: \$352,458  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Shaw, J. H. HQ-EE/Kakar, R. K. 31-Atmos Sci  
HQ-EB/Watson, R. T.

**NAG 2-231** **Ohio University** **4194**  
Performance comparison of three concepts of differential GPS in the civil helicopter environment  
*Period* *Obligations*  
05/01/83-02/28/85 FY85: TOTAL: \$201,798  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McFarland, R. H. ARC/Edwards, F. G. 41-Aero Engr  
Lilley, R. W. ARC/Bull, J. S.  
McCall, D. L.

**NAG 3-637** **Ohio University** **4195**  
Exp study of the plume characteristics of electrothermal thrusters  
*Period* *Obligations*  
06/01/85-11/01/85 FY85: \$20,000 TOTAL: \$20,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Serafini, J. S. LERC/Sovey, J. S. 49-Engr, NEC

**NAS 2-11969** **Ohio University** **4196**  
Design, develop, build, test, and deliver a fully integrated and validated differential Global Positioning System  
*Period* *Obligations*  
09/24/84-03/31/86 FY85: \$348,865 TOTAL: \$383,865  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McFarland, R. H. ARC/Edwards, F. G. 45-Elec Engr

**NGR 36-009-017** **Ohio University** **4197**  
Joint university program in air transportation systems  
*Period* *Obligations*  
02/26/71-11/30/87 FY85: \$99,727 TOTAL: \$1,009,123  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
McFarland, R. H. LARC/Hood, R. V. 45-Elec Engr  
LARC/Bryant, W. H.

**NAG 1-444** **University of Akron** **4198**  
Solution algorithms for steady and transient rolling contact  
*Period* *Obligations*  
09/01/84-10/31/85 FY85: TOTAL: \$40,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Padovan, J. LARC/Tanner, J. A.  
29-Math/Cmputer, NEC

**NAG 1-448** **University of Akron** **4199**  
Synthesis and characterization of thermally stable, solvent/ impact resistant, thermoplastic and thermosetting polyimides  
*Period* *Obligations*  
02/07/84-02/06/86 FY85: \$45,733 TOTAL: \$90,951  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Harris, F. W. LARC/Hergenrother, P. M. 12-Chemistry  
LARC/Jensen, B. J.

**NAG 3-50** **University of Akron** **4200**  
NASA LERC/Akron University graduate cooperative fellowship programs  
*Period* *Obligations*  
06/01/80-05/26/86 FY85: \$60,000 TOTAL: \$290,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Fertis, D. G. LERC/Chamis, C. C. 41-Aero Engr  
Chang, T. P. LERC/Johns, R. H.  
Simon, A.

**NAG 3-54** **University of Akron** **4201**  
Self adaptive solutions strategies  
*Period* *Obligations*  
08/01/80-01/27/86 FY85: \$45,240 TOTAL: \$191,390  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Padovan, J. LERC/Chamis, C. C. 46-Mech Engr  
LERC/Hirschbein, M. S.

**NAG 3-55** **University of Akron** **4202**  
Helicopter transmission reliability model  
*Period* *Obligations*  
08/01/80-12/27/85 FY85: \$50,000 TOTAL: \$242,630  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Savage, M. LERC/Lewicki, D. G. 46-Mech Engr

**NAG 3-265** **University of Akron** **4203**  
Analysis of thermo-mechanical response of thick thermal protective coating systems  
*Period* *Obligations*  
03/05/82-08/30/86 FY85: TOTAL: \$144,786  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Padovan, J. LERC/McDonald, G. 46-Mech Engr  
Chung, B. T. LERC/Hendricks, R. C.  
Braun, M. J.

**NAG 3-304** **University of Akron** **4204**  
Effects of journal orbital vibration on the time dependent pressure-flow characteristics of a hydrostatic journal bearing  
*Period* *Obligations*  
09/01/82-04/29/86 FY85: \$47,000 TOTAL: \$165,377  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Braun, M. J. LERC/Ulbricht, T. E. 49-Engr, NEC  
Adams, M. L., Jr.



**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAG 3-307** **University of Akron** **4205**  
Nonlinear finite element analysis of shells with large aspect ratios

Period	Obligations	
06/30/82-10/28/85	FY85: \$54,780	TOTAL: \$169,768
Prin. Invest.	NASA Tech. Officer	CASE Category
Chang, T. Y.	LERC/Chamis, C. C.	41-Aero Engr
	LERC/Johns, R. H.	

**NAG 3-318** **University of Akron** **4206**  
Investigation of liquid propellant reorientation induced mixing and thermal behavior in a low-gravity environment

Period	Obligations	
10/01/82-11/30/84	FY85:	TOTAL: \$90,052
Prin. Invest.	NASA Tech. Officer	CASE Category
Hochstein, J. I.	LERC/Aydelott, J. C.	46-Mech Engr
Gerhart, P. M.	LERC/Smolak, G. R.	

**NAG 3-379** **University of Akron** **4207**  
Multiaxial structural behavior of high temperature materials

Period	Obligations	
12/15/82-12/19/85	FY85: \$149,958	TOTAL: \$383,121
Prin. Invest.	NASA Tech. Officer	CASE Category
Robinson, D. N.	LERC/Gaunter, L. D.	41-Aero Engr
Ellis, J. R.		

**NAG 3-416** **University of Akron** **4208**  
Computation of flow around airfoils with ice accretion using a 2-D Navier-Stokes computer code

Period	Obligations	
04/01/83-11/29/85	FY85: \$34,485	TOTAL: \$111,975
Prin. Invest.	NASA Tech. Officer	CASE Category
Potapczuk, M. G.	LERC/Shaw, R. J.	41-Aero Engr
Gerhart, P. M.		

**NAG 3-479** **University of Akron** **4209**  
Mathematical and experimental modeling of impact ice dispersion mechanisms

Period	Obligations	
10/30/83-02/27/86	FY85: \$65,000	TOTAL: \$146,602
Prin. Invest.	NASA Tech. Officer	CASE Category
Scavuzzo, R. J.	LERC/Olsen, W.	41-Aero Engr
Chu, M. L.		

**NAG 3-488** **University of Akron** **4210**  
Viscosities of fuel-wax systems at low temperatures

Period	Obligations	
11/15/83-08/31/85	FY85:	TOTAL: \$21,620
Prin. Invest.	NASA Tech. Officer	CASE Category
Schruben, D. L.	LERC/Friedman, R.	43-Chem Engr

**NAG 3-500** **University of Akron** **4211**  
Theoretical and experimental flow cell studies of a hydrogen-bromine rechargeable fuel cell

Period	Obligations	
12/12/83-03/10/86	FY85: \$20,851	TOTAL: \$40,846
Prin. Invest.	NASA Tech. Officer	CASE Category
Savinell, R. F.	LERC/Reid, M. A.	43-Chem Engr
	LERC/Hagedorn, N. H.	

**NAG 3-531** **University of Akron** **4212**  
Numerical study of flow in the disk-stator cavity of a gas turbine

Period	Obligations	
06/01/84-10/31/85	FY85:	TOTAL: \$46,839
Prin. Invest.	NASA Tech. Officer	CASE Category
Drummond, J. E.	LERC/Roelke, R. J.	41-Aero Engr

**NAG 3-664** **University of Akron** **4213**  
Hierarchical parallel computer architectures defined by computational multidisciplinary mechanics

Period	Obligations	
10/07/85-10/06/86	FY85: \$60,537	TOTAL: \$60,537
Prin. Invest.	NASA Tech. Officer	CASE Category
Padovan, J.	LERC/Chamis, C. C.	41-Aero Engr
	LERC/Johns, R. H.	

**NGT 36-001-802** **University of Akron** **4214**  
NASA graduate student researchers program

Period	Obligations	
06/01/82-05/31/85	FY85:	TOTAL: \$45,619
Prin. Invest.	NASA Tech. Officer	CASE Category
Savinell, R. F.	HQ-LB/Owens, F. C.	43-Chem Engr

**NGT 36-001-803** **University of Akron** **4215**  
NASA graduate student researchers program

Period	Obligations	
06/01/82-05/31/85	FY85:	TOTAL: \$41,800
Prin. Invest.	NASA Tech. Officer	CASE Category
Savinell, R. F.	HQ-LB/Owens, F. C.	43-Chem Engr

**NAG 1-8** **University of Cincinnati** **4216**  
Spline collocation for viscous flow over-after body configurations

Period	Obligations	
11/01/79-10/31/85	FY85: \$25,200	TOTAL: \$180,430
Prin. Invest.	NASA Tech. Officer	CASE Category
Rubin, S. G.	LARC/Wilmoth, R. G.	41-Aero Engr
Khosla, P. K.	LARC/Putnam, L. E.	

**NAG 1-465** **University of Cincinnati** **4217**  
Study of external separated flows using Navier Stokes equations

Period	Obligations	
04/01/84-03/31/86	FY85: \$46,300	TOTAL: \$61,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Ghia, K. N.	LARC/Margason, R. J.	41-Aero Engr
Ghia, U.	LARC/Thomas, J. L.	

**NAG 1-548** **University of Cincinnati** **4218**  
Improvements in the solution of the viscous shock-layer equations

Period	Obligations	
01/01/85-12/31/85	FY85: \$33,600	TOTAL: \$33,600
Prin. Invest.	NASA Tech. Officer	CASE Category
Davis, R. T.	LARC/Moss, J. N.	41-Aero Engr
Gordon, R.		

## NASA'S UNIVERSITY PROGRAM

### OHIO (Continued)

<b>NAG 2-175</b>	<b>University of Cincinnati</b>	<b>4219</b>
<b>Study of optimal 3-D and 4-D trajectories for helicopters</b>		
<i>Period</i>	<i>Obligations</i>	
06/01/82-01/31/86	FY85: \$27,325	TOTAL: \$81,931
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Slater, G. L.	ARC/Erzberger, H.	41-Aero Engr
	ARC/Denery, D. G.	

NAG 3-506		University of Cincinnati	4227
Term studies of LCF tested marm 200 single crystals			
Period		Obligations	
12/28/83-12/26/85	FY85: \$17,610	TOTAL: \$22,772	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Jayaraman, N.	LERC/Miner, R. V.	47-Materials Engr	
	LERC/Hirschberg, M.		

NAG 2-274		University of Cincinnati	4220
Flap lag torsional dynamics of helicopter rotor blades in forward flight			
Period	Obligations		
01/01/84-02/28/86	FY85: \$44,447	TOTAL: \$83,852	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Da Silva, M. C.	ARC/Hodges, D. H.	41-Aero Engr	

<b>NAG 3-511</b>	<b>University of Cincinnati</b>	<b>4228</b>
Constitutive modeling of in elastic anisotropic material response		
<i>Period</i>	<i>Obligations</i>	
12/16/83-04/14/86	FY85: \$136,652	TOTAL: \$243,866
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stouffer, D. C.	LERC/Thompson, R. L.	41-Aero Engr

<b>NAG 3-26</b>	<b>University of Cincinnati</b>	<b>4221</b>
Experimental study of radial turbine scrolls		
<i>Period</i>	<i>Obligations</i>	
03/01/80-09/30/85	FY85:	TOTAL: \$111,230
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tabakoff, W.	LERC/McLallin, K. L.	41-Aero Engr

NAG 3-515		University of Cincinnati	4229
High efficiency photochemical processing for semiconductor fabrication			
Period	Obligations		
01/05/84-03/03/86	FY85: \$50,000	TOTAL: \$89,868	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Mantei, T. D.	LERC/Leon. R.	45-Elec Enor	

<b>NAG 3-52</b>	<b>University of Cincinnati</b>	<b>4222</b>
Analytical study of the compressible three dimensional flow in turbine scrolls		
<i>Period</i>		<i>Obligations</i>
03/27/80-10/30/85	FY85:	TOTAL: \$41,486
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hamed, A. A.	LERC/Katsanis, T.	41-Aero Engr

<b>NAG 3-532</b>	<b>University of Cincinnati</b>	<b>4230</b>
Investigate which junction, mim or the concentrator, has superior rectification properties in the infrared		
<i>Period</i>	<i>Obligations</i>	
04/15/84-10/14/85	FY85: \$50,000	TOTAL: \$75,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Boyd, J. T.	LERC/Myers, I. T.	45-Elec Engr
	LERC/Krawczonek, W. M.	

<b>NAG 3-194</b>	<b>University of Cincinnati</b>	<b>4223</b>
<b>Study of internal viscous flows</b>		
<i>Period</i>	<i>Obligations</i>	
07/15/81-05/30/86	FY85: \$23,825	TOTAL: \$158,813
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ghia, K. N.	LERC/Katsanis, T.	41-Aero Engr
Ghia, U.	LERC/Sockol, P. M.	

<b>NAG 3-582</b>	<b>University of Cincinnati</b>	<b>4231</b>
Techniques for digital video image coding and implementation using systolic arrays		
<i>Period</i>	<i>Obligations</i>	
11/10/84-11/09/85	FY85: \$27,695	TOTAL: \$27,695
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ramamoorthy, P. A.	LERC/Whyte, W. A.	45-Elec Engr
	LERC/Miller, E. F.	

<b>NAG 3-297</b>	<b>University of Cincinnati</b>	<b>4224</b>
<b>Development of injection devices based upon GaAs</b>		
<i>Period</i>	<i>Obligations</i>	
06/30/82-01/31/86	FY85: \$55,000	TOTAL: \$174,006
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Henderson, H. T.	LERC/Sundberg, G. R.	45-Elec Engr
Kesel, P. B.		

NAG 3-646		University of Cincinnati	4232
Plasma etching on gas substrates			
<i>Period</i>	<i>Obligations</i>		
07/05/85-11/19/85	FY85: \$15,000	TOTAL: \$15,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Mantei, T. D.	LERC/Leon, R. P.	47-MATERIALS Enr	

<b>NAG 3-397</b>	<b>University of Cincinnati</b>	<b>4225</b>
<b>Global relaxation with the PNS equations for internal flows</b>		
<i>Period</i>	<i>Obligations</i>	
<b>03/01/83-11/28/85</b>	<b>FY85:</b>	<b>TOTAL: \$54,130</b>
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
<b>Rubin, S. G.</b>	<b>LERC/Adamczyk, J. J.</b>	<b>41-Aero Engr</b>

<b>NAG 3-455</b>	<b>University of Cincinnati</b>	<b>4226</b>
Etching of thin layers for homojunction GaAs photovoltaic cells		
<i>Period</i>	<i>Obligations</i>	
10/01/83-09/30/85	FY85: \$34,355	TOTAL: \$94,105
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mantei, T. D.	LERC/Leon, R.	45-Elec Engr
	LERC/Flood, D. J.	

<b>NAS 8-34503</b>	<b>University of Cincinnati</b>	<b>4233</b>
<b>Investigation of improved modal parameter estimation procedure</b>		
<i>Period</i>	<i>Obligations</i>	
08/04/81-01/31/86	FY85: \$92,839	TOTAL: \$142,965
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brown, D. L.	MSFC/Coleman, A. D.	41-Aero Engr
	MSFC/Kirby, C. A.	

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NCC 3-33** **University of Cincinnati** **4234**  
III-V compound semiconductor technology  
*Period* *Obligations*  
07/28/83-12/26/85 FY85: \$80,000 TOTAL: \$364,978  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kapoor, V. J. LERC/Connolly, D. J. 19-Phys Sci, NEC  
Henderson, H. T. LERC/Williams, W. D.

**NCC 3-36** **University of Cincinnati** **4235**  
Electronic properties of diamond-like carbon films for solid state devices  
*Period* *Obligations*  
12/15/83-12/13/85 FY85: \$50,000 TOTAL: \$100,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kapoor, V. J. LERC/Mirtich, M. J. 19-Phys Sci, NEC  
LERC/Gulino, D. A.

**NCC 3-44** **University of Cincinnati** **4236**  
Millimeter wave integrated circuit technology  
*Period* *Obligations*  
07/28/84-07/27/86 FY85: TOTAL: \$98,337  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kapoor, V. J. LERC/Anzic, G. 45-Elec Engr  
Bhasin, K. B. LERC/Connolly, D. J.

**NGT 36-004-800** **University of Cincinnati** **4237**  
NASA graduate student researchers program  
*Period* *Obligations*  
07/01/80-06/30/86 FY85: \$72,692 TOTAL: \$452,690  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rubin, S. G. HQ-RT/Graves, R. A., Jr. 41-Aero Engr

**NSG 1185** **University of Cincinnati** **4238**  
Geometric modeling and analysis of rod-like large space structures  
*Period* *Obligations*  
05/01/75-10/31/84 FY85: TOTAL: \$262,880  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Nayfeh, A. H. LARC/Mikulas, M. M., Jr. 49-Engr, NEC

**NSG 3022** **University of Cincinnati** **4239**  
Investigation of a new family of semiconductor diodes based upon bulk effects of deep impurities  
*Period* *Obligations*  
07/01/74-02/02/86 FY85: \$102,000 TOTAL: \$561,619  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Henderson, H. T. LERC/Sundberg, G. R. 45-Elec Engr

**NSG 3188** **University of Cincinnati** **4240**  
Investigations into the geometry of straight and spiral bevel gears  
*Period* *Obligations*  
04/01/78-02/14/86 FY85: \$47,906 TOTAL: \$222,906  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Huston, R. L. LERC/Oswald, F. B. 46-Mech Engr

**DEN 3-286** **University of Dayton** **4241**  
Fatigue testing of wood composite wind turbine blade materials  
*Period* *Obligations*  
03/24/82-04/24/84 FY85: TOTAL: \$89,161  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Emery, S. A. LERC/Lark, R. L. 47-Materials Engr

**NAG 1-522** **University of Dayton** **4242**  
Experimental rain simulation studies in a wind tunnel  
*Period* *Obligations*  
09/19/84-08/15/85 FY85: \$20,900 TOTAL: \$41,809  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Luers, J. K. LARC/Dunham, R. E., Jr. 41-Aero Engr  
Haines, P. A.  
Fiscus, I. B.

**NAG 3-65** **University of Dayton** **4243**  
Development of an airfoil ice accretion model  
*Period* *Obligations*  
04/28/80-10/24/84 FY85: TOTAL: \$182,518  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Luers, J. K. LERC/Shaw, R. J. 41-Aero Engr  
LERC/Newton, J. L.

**NAG 3-246** **University of Dayton** **4244**  
Crack initiation and growth at stress concentration sites  
*Period* *Obligations*  
01/02/82-06/30/84 FY85: TOTAL: \$109,440  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gallagher, J. P. LERC/Orange, T. W. 47-Materials Engr  
LERC/Shannon, J. L., Jr.

**NAG 3-526** **University of Dayton** **4245**  
Numerical simulation of axisymmetric shape layers  
*Period* *Obligations*  
02/20/84-06/18/86 FY85: \$25,000 TOTAL: \$75,158  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Scott, J. N. LERC/Stone, J. R. 41-Aero Engr  
Whitford, D. H. LERC/Miles, J. H.

**NAS 1-17522** **University of Dayton** **4246**  
Develop, fabricate, deliver and install an oven heated copper vapor laser  
*Period* *Obligations*  
09/14/83-06/30/84 FY85: TOTAL: \$49,009  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Grokay, M. C. LARC/Weinstein, L. M. 41-Aero Engr  
Harris, J. S. LARC/Burner, A. W.  
Huff, L.

**NAS 5-28297** **University of Dayton** **4247**  
Verification and analysis of satellite derived data  
*Period* *Obligations*  
11/01/84-10/31/87 FY85: \$84,971 TOTAL: \$84,971  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Luers, J. K. GSFC/Schmidlin, F. J. 31-Atmos Sci

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAS 6-3086 University of Dayton 4248**  
 Service, materials and personnel necessary to provide correlative data efforts for WFC field measurements office  
*Period Obligations*  
 03/01/80-10/31/84 FY85: TOTAL: \$301,918  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Luers, J. K. GSFC/Schmidlin, F. J. 31-Atmos Sci  
 Keller, J.  
 Jenks, F.

**NAS 8-34682 University of Dayton 4249**  
 Turbine blade damping study  
*Period Obligations*  
 12/03/81-07/31/84 FY85: TOTAL: \$398,888  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Drake, M. L. MSFC/Kiefling, L. 46-Mech Engr  
 MSFC/Swint, M. S.

**NAS 8-34687 University of Dayton 4250**  
 Prediction of atmospheric turbulence using an index to the drt  
*Period Obligations*  
 07/02/82-09/30/85 FY85: TOTAL: \$191,828  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Luers, J. K. MSFC/Camp, D. W. 31-Atmos Sci  
 MSFC/Smith, G. T.

**NAS 8-36646 University of Dayton 4251**  
 Light gas projectile hypervelocity measurement systems  
*Period Obligations*  
 05/15/85-08/15/86 FY85: \$42,116 TOTAL: \$42,116  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Piekutowski, A. MSFC/Taylor, R. A. 11-Astronomy  
 Stroder, E. MSFC/Smith, H. E.

**NAG 1-578 University of Toledo 4252**  
 Control design for robust stability in linear regulators: Applications to aerospace flight control  
*Period Obligations*  
 06/17/85-06/16/86 FY85: \$39,649 TOTAL: \$39,649  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Yedavalli, R. K. LARC/Newsom, J. R. 41-Aero Engr  
 LARC/Wieseman, G. D.

**NAG 3-42 University of Toledo 4253**  
 Digital television simulation facility  
*Period Obligations*  
 03/31/80-12/12/85 FY85: \$63,794 TOTAL: \$266,281  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Kwatra, S. C. LERC/Whyte, W. A. 45-Elec Engr

**NAG 3-72 University of Toledo 4254**  
 Numerical simulation of heat transfer phenomena occurring during deicing of aircraft components  
*Period Obligations*  
 06/01/80-10/30/85 FY85: TOTAL: \$153,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Dewitt, K. J. LERC/Shaw, R. J. 41-Aero Engr  
 Keith, T. G.

**NAG 3-157 University of Toledo 4255**  
 Interference susceptibility of digital television systems  
*Period Obligations*  
 01/09/81-11/15/85 FY85: \$67,791 TOTAL: \$221,560  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Kwatra, S. C. LERC/Stevens, G. H. 22-Computer Science

**NAG 3-276 University of Toledo 4256**  
 A study of friction and wear of metals in corrosive aqueous solutions  
*Period Obligations*  
 04/15/82-12/15/84 FY85: TOTAL: \$28,544  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Rengstorff, G. W. LERC/Buckley, D. H. 43-Chem Engr  
 LERC/Loomis, W. R.

**NAG 3-309 University of Toledo 4257**  
 A laser-Doppler anemometer investigation of a normal shock-wave-boundary layer interaction  
*Period Obligations*  
 07/25/82-10/23/85 FY85: TOTAL: \$104,155  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Keith, T. G., Jr. LERC/Hingst, W. R. 41-Aero Engr  
 Jakubowski, G. S.

**NAG 3-355 University of Toledo 4258**  
 Numerical grid generation and grid patching techniques in practical combustor geometries  
*Period Obligations*  
 11/25/82-10/30/85 FY85: TOTAL: \$100,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Keith, T. G. LERC/Vanoverbeke, T. 46-Mech Engr  
 Dewitt, K. J.

**NAG 3-373 University of Toledo 4259**  
 The analysis and design of a composite wood blade for a large wind turbine  
*Period Obligations*  
 12/05/82-01/04/85 FY85: TOTAL: \$37,058  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Fu, K. C. LERC/Sullivan, T. L. 49-Engr, NEC  
 LERC/Spera, D. A.

**NAG 3-413 University of Toledo 4260**  
 Amorphous metals for the magnetic cores in small electric motors  
*Period Obligations*  
 06/01/83-09/30/85 FY85: TOTAL: \$118,029  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Stuart, T. A. LERC/Hansen, I. G. 45-Elec Engr  
 King, R. J.

**NAG 3-452 University of Toledo 4261**  
 Effect of curvature on heat transfer in a turbulent boundary layer  
*Period Obligations*  
 08/01/83-03/28/86 FY85: \$15,009 TOTAL: \$49,824  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Jeng, D. R. LERC/Gaugler, R. E. 46-Mech Engr  
 Keith, T. G.

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAG 3-478**                      **University of Toledo**                      **4262**  
Study of electrical characteristics of rotary transformers  
*Period*                                      *Obligations*  
01/01/84-06/30/85                      FY85:                      TOTAL: \$43,219  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Stuart, T. A.                      LERC/Schwarze, G. E.                      45-Elec Engr  
King, R. J.

**NAG 5-586**                      **University of Toledo**                      **4269**  
Database interfaces on NASA s heterogeneous database system  
*Period*                                      *Obligations*  
07/15/85-07/14/86                      FY85: \$25,000                      TOTAL: \$25,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Kertz, G.                      GSFC/Jacobs, B.                      22-Computer Science  
GSFC/Berbert, J.

**NAG 3-533**                      **University of Toledo**                      **4263**  
Study of computer graphics display of fluid flow and combustion  
*Period*                                      *Obligations*  
03/15/84-12/14/85                      FY85: \$23,000                      TOTAL: \$49,042  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
White, P. R.                      LERC/Schock, H. J.                      22-Computer Science

**NAGW 89**                      **University of Toledo**                      **4270**  
Properties of intersellar grains  
*Period*                                      *Obligations*  
09/01/80-02/28/86                      FY85: \$18,899                      TOTAL: \$84,040  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Witt, A. N.                      HQ-EZ/Stencel, R. E.                      11-Astronomy  
HQ-EZ/Weiler, E. J.

**NAG 3-577**                      **University of Toledo**                      **4264**  
Fluid physics phenonena of resistojet thruster  
*Period*                                      *Obligations*  
10/15/84-11/14/85                      FY85: \$25,000                      TOTAL: \$25,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Dewitt, K. J.                      LERC/Berkopec, F. D.                      19-Phys Sci, NEC  
Keith, T. G.

**NAGW 229**                      **University of Toledo**                      **4271**  
Chromospheric activity in the FK Comae stars  
*Period*                                      *Obligations*  
09/01/81-02/28/86                      FY85: \$8,996                      TOTAL: \$31,780  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Bopp, B. W.                      HQ-EZ/Weiler, E. J.                      11-Astronomy  
HQ-EZ/Stencel, R. E.

**NAG 3-629**                      **University of Toledo**                      **4265**  
Vibration and stability of rotating blades  
*Period*                                      *Obligations*  
03/30/85-10/30/85                      FY85: \$28,000                      TOTAL: \$28,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Keith, T.                      LERC/Brown, G. V.                      41-Aero Engr  
LERC/Kaza, K. V.

**NCC 3-5**                      **University of Toledo**                      **4272**  
Evaluation of the performance of wind turbine concepts and operating wind turbines  
*Period*                                      *Obligations*  
09/15/79-12/31/85                      FY85: \$75,000                      TOTAL: \$444,167  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Keith, T. G.                      LERC/Corrigan, R. D.                      45-Elec Engr  
White, P. R.  
Little, R. R.

**NAG 5-253**                      **University of Toledo**                      **4266**  
Observation of stellor winds in two massive binary stars in known orbits  
*Period*                                      *Obligations*  
07/15/82-01/31/86                      FY85:                      TOTAL: \$22,493  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Morrison, N. D.                      GSFC/Kondo, Y.                      11-Astronomy  
Garmany, C. D.

**NCC 3-22**                      **University of Toledo**                      **4273**  
Coded phase modulation  
*Period*                                      *Obligations*  
10/15/82-12/31/84                      FY85:                      TOTAL: \$44,344  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Kwatra, S. C.                      LERC/Connolly, D. J.                      45-Elec Engr

**NAG 5-254**                      **University of Toledo**                      **4267**  
Southern active chromosphere variables rotational modulation of selected stars  
*Period*                                      *Obligations*  
08/01/82-08/31/86                      FY85: \$12,388                      TOTAL: \$29,151  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Bopp, B. W.                      GSFC/Kondo, Y.                      11-Astronomy  
Parsons, S. B.

**NCC 3-34**                      **University of Toledo**                      **4274**  
Mass transport phenemona between bubbles and dissolved gases in liquid under reduced gravity conditions  
*Period*                                      *Obligations*  
11/15/83-01/13/86                      FY85: \$20,000                      TOTAL: \$65,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Dewitt, K. J.                      LERC/Labus, T. L.                      49-Engr, NEC  
Brockwell, J. L.

**NAG 5-467**                      **University of Toledo**                      **4268**  
The far ultraviolet extinction and the size distribution of interstellar grains  
*Period*                                      *Obligations*  
09/01/84-08/31/86                      FY85: \$4,932                      TOTAL: \$10,376  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Witt, A. N.                      GSFC/Kondo, Y.                      11-Astronomy  
Bohlin, C.

**NSG 3139**                      **University of Toledo**                      **4275**  
Stability analysis of wind turbines with long, flexible blades  
*Period*                                      *Obligations*  
02/22/77-11/14/85                      FY85: \$19,100                      TOTAL: \$414,515  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Keith, T. G., Jr.                      LERC/Brown, G. V.                      41-Aero Engr

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NSG 7301 University of Toledo 4276**  
 Physical study of comets  
*Period* *Obligations*  
 01/01/77-03/31/86 FY85: TOTAL: \$61,366  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Delsemme, A. H. HQ-EL/Brinton, H. C. 32-Geological Sci

**NCC 2-229 Wright State University 4277**  
 Evaluation of putative neurochemical intermediaries in space motion sickness  
*Period* *Obligations*  
 01/01/83-12/31/85 FY85: \$75,000 TOTAL: \$220,949  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Crampton, G. H. ARC/Daunton, N. G. 51-Biological Sci  
 Lucot, J. B. ARC/Corcoran, M. L.

**NGT 36-024-790 Wright State University 4278**  
 Specialized post md training in aerospace medicine  
*Period* *Obligations*  
 01/01/85-12/31/85 FY85: \$302,500 TOTAL: \$1,787,389  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Mohler, S. HQ-EB/Bielstein, H. 59-Life Sci, NEC  
 HQ-EB/Nicogossian, A. E.

**OKLAHOMA**

**NAG 3-74 Oklahoma State University 4279**  
 Investigations of flow fields found in typical combustor geometries  
*Period* *Obligations*  
 07/01/80-06/30/84 FY85: TOTAL: \$231,130  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Lilley, D. G. LERC/Holderman, J. D. 46-Mech Engr  
 McLaughlin, D. K.

**NAG 3-549 Oklahoma State University 4280**  
 Lateral jet injection into typical combustor flow field  
*Period* *Obligations*  
 05/01/84-01/31/86 FY85: TOTAL: \$64,690  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Lilley, D. G. LERC/Holdeman, J. D. 41-Aero Engr

**NAGW 26 Oklahoma State University 4281**  
 Microbial ecology of extreme environments: Antarctic dry valley yeasts and growth in substrate-limited habitats  
*Period* *Obligations*  
 12/01/79-08/31/84 FY85: TOTAL: \$189,632  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Clayton, R. N. HQ-EB/Devincenzi, D. L. 51-Biological Sci  
 Mayeda, T. K. HQ-EB/Rambler, M.  
 Hutcheon, I. D.

**NASW 3313 Oklahoma State University 4282**  
 Spacemobile operation and management of aerospace education services project  
*Period* *Obligations*  
 10/01/79-12/18/84 FY85: \$13,379 TOTAL: \$6,737,061  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Wiggins, K. HQ-LF/Bilbrough, L. 99-Multi-Discip

**NASW 4000 Oklahoma State University 4283**  
 Management and operation of the aerospace educator services project  
*Period* *Obligations*  
 10/01/84-09/30/86 FY85: \$2,120,156 TOTAL: \$2,120,156  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Wiggins, K. E. HQ-LF/Bilbrough, L. B. 99-Multi-Discip  
 Erlich, N.

**NSG 7640 Oklahoma State University 4284**  
 Remote sensing applications to Oklahoma resources and environmental problems  
*Period* *Obligations*  
 09/01/79-08/30/87 FY85: \$100,000 TOTAL: \$685,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Walsh, S. J. HQ-EE/Tuyahov, A. J. 31-Atmos Sci

**NASW 3659 Southeastern Oklahoma State Univ. 4285**  
 Operation of the Kerr Industrial Application center  
*Period* *Obligations*  
 07/01/82-06/30/84 FY85: TOTAL: \$342,322  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Harmon, J. HQ-LG/Bivins, R. G. 99-Multi-Discip  
 HQ-LG/Ault, L. A.

**NASW 3919 Southeastern Oklahoma State Univ. 4286**  
 Operation of the kiac application center  
*Period* *Obligations*  
 07/01/85-06/30/86 FY85: \$155,000 TOTAL: \$330,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 McRovey, T. J. HQ-IU/Bivins, R. G. 99-Multi-Discip  
 HQ-IU/Ault, L. A.

**NAG 9-18 Univ of Oklahoma - Health Science Ctr 4287**  
 Inhibition by camp by lymphocyte plasma membrane endogenous phosphorylating study  
*Period* *Obligations*  
 06/01/81-11/30/85 FY85: TOTAL: \$60,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Nordquist, R. JSC/Lucid, S. 56-Medical Sciences

**NAS 2-10408 Univ of Oklahoma - Health Science Ctr 4288**  
 Cosmos 1981 experiment: Carotid arterial flow and pressure measurement of primates  
*Period* *Obligations*  
 10/01/79-10/31/84 FY85: TOTAL: \$129,307  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Stone, H. L. ARC/Heinrich, M. R. 51-Biological Sci

**NCA 2-580401 Univ of Oklahoma - Health Science Ctr 4289**  
 Mechanism of decreased baroreceptor control of heart rate after myocardial infarction  
*Period* *Obligations*  
 10/01/83-09/30/85 FY85: \$12,000 TOTAL: \$42,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Foreman, R. D. ARC/Sandler, H. 51-Biological Sci

**NASA'S UNIVERSITY PROGRAM  
OKLAHOMA (Continued)**

**NCC 2-24 Univ of Oklahoma - Health Science Ctr 4290**  
Central and peripheral mechanisms underlying cardiovascular deconditioning in the unanesthetized primate

Period	Obligations	
11/01/79-10/31/85	FY85: \$132,565	TOTAL: \$553,461
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stone, H. L.	ARC/Sandler, H.	59-Life Sci, NEC

**NAG 3-508 University of Oklahoma - Norman 4291**  
Electrical transmission system for 20 khz power distribution in airplanes

Period	Obligations	
12/21/83-07/20/85	FY85:	TOTAL: \$67,399
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zelby, L. W.	LERC/Hansen, I. C.	45-Elec Engr

**NAG 5-283 University of Oklahoma - Norman 4292**  
Initialization experiments with numerical weather prediction mesoscale models

Period	Obligations	
11/15/82-09/30/84	FY85:	TOTAL: \$46,002
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gal-chen, T.	GSFC/Uccellini, L. W.	31-Atmos Sci
	GSFC/Simpson, J.	

**NAG 5-289 University of Oklahoma - Norman 4293**  
Research relative to variational mesoscale satellite data assimilation and initialization

Period	Obligations	
01/15/83-03/31/86	FY85:	TOTAL: \$170,825
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sasaki, Y. K.	GSFC/Koch, S. E.	31-Atmos Sci
Goerss, J. S.	GSFC/Uccellini, L.	

**NAG 5-525 University of Oklahoma - Norman 4294**  
Composite studies of atmospheric cyclogenesis based in satellite imagery

Period	Obligations	
05/01/85-04/30/86	FY85: \$48,775	TOTAL: \$48,775
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carr, F. H.	GSFC/Petersen, R. A.	31-Atmos Sci
	GSFC/Uccellini, L. W.	

**NAG 8-372 University of Oklahoma - Norman 4295**  
Observations of the rapid variable AE AQR in the High Energy Astronomical Observatory-B guest investigator program

Period	Obligations	
09/15/80-09/15/84	FY85:	TOTAL: \$5,892
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chincarini, G.	MSFC/Stone, J. F.	11-Astronomy

**NAS 8-34749 University of Oklahoma - Norman 4296**  
Analysis of lidar, radar and satellite measurements on severe thunderstorms and their environment

Period	Obligations	
04/27/82-08/30/85	FY85:	TOTAL: \$158,935
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Doviak, R. J.	MSFC/Fitzjarrald, D. E.	31-Atmos Sci
Bluestins, H. B.	MSFC/Fitch, G. H.	

**NCC 5-600 University of Oklahoma - Norman 4297**  
Determining the probability of lightning strikes to aircraft

Period	Obligations	
04/01/82-12/31/85	FY85:	TOTAL: \$150,425
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sasaki, Y. K.	GSFC/Gerlich, J. C.	39-Env Sci, NEC
	GSFC/Carr, R. E.	

**OREGON**

**NAG 1-160 Oregon Graduate Center 4298**  
Systematic global measurements of methane and carbon monoxide

Period	Obligations	
03/03/81-07/02/84	FY85:	TOTAL: \$404,243
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rasmussen, R. A.	LARC/Reichle, H. G., Jr.	31-Atmos Sci
Khalil, M. A.	LARC/Hypes, W. D.	

**NAG 1-382 Oregon Graduate Center 4299**  
Global tropospheric experiment/phase 1 supporting measurements for total nonmethane hydrocarbons, carbon monoxide, and related halocarbons

Period	Obligations	
07/01/83-09/30/84	FY85:	TOTAL: \$62,188
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rasmussen, R. A.	LARC/Mugler, J. P.	31-Atmos Sci
Khalil, M. A.	LARC/Harriss, R. C.	

**NAG 1-589 Oregon Graduate Center 4300**  
Biogenic trace gas measurements in the amazon boundary layer experiments

Period	Obligations	
05/16/85-05/15/86	FY85: \$37,897	TOTAL: \$37,897
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rasmussen, R. A.	LARC/Hoell, J. M.	31-Atmos Sci
Khalil, M. A.	LARC/Bendura, R. J.	

**NAG 3-434 Oregon Graduate Center 4301**  
Evaluation of single crystal Ia B cathodes for use in a high frequency backward wave oscillator tube

Period	Obligations	
06/30/83-11/29/85	FY85: \$50,309	TOTAL: \$150,286
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Swanson, L. W.	LERC/Wintucky, E. G.	19-Phys Sci, NEC
Davis, P. R.		

**NAGW 280 Oregon Graduate Center 4302**  
Fluorocarbons, chlorocarbons, and nitrous oxide: Continuous measurements at 5 global sites

Period	Obligations	
12/01/81-11/30/85	FY85: \$359,900	TOTAL: \$984,824
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rasmussen, R. A.	HQ-EE/Demore, W. B.	31-Atmos Sci
	HQ-EE/Hampson, R. F.	

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**OREGON (Continued)**

**NAGW 600 Oregon Graduate Center 4303**  
Oceanic sources and sinks of organic sulfur compounds and methyl halidea  
*Period Obligations*  
02/01/84-09/30/84 FY85: TOTAL: \$52,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Rasmussen, R. A. HQ-EE/Hampson, R. F. 31-Atmos Sci  
Khalil, M. A. HQ-EE/Demore, W. B.

**NAS 5-27369 Oregon State University 4310**  
Tectonic studies of the gulf of California  
*Period Obligations*  
09/30/82-12/28/85 FY85: TOTAL: \$149,995  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Couch, R. W. GSFC/Mead, G. D. 32-Geological Sci  
Ness, G. E.  
Fehler, M. C.

**NAS 8-35333 Oregon Health Sciences University 4304**  
Cell partition in two polymer aqueous phases  
*Period Obligations*  
05/05/83-05/04/86 FY85: \$80,000 TOTAL: \$260,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Brooks, D. E. MSFC/Fogle, V. 59-Life Sci, NEC  
MSFC/Snyder, R. S.

**NAS13-268 Oregon State University 4311**  
The development and evaluation of a mathematical mode capable of defining the interaction of thermal IR energy with forest canopies of various compositions and topographical position at H J  
*Period Obligations*  
08/06/85-08/05/86 FY85: \$24,779 TOTAL: \$24,779  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Schrumph, B. J. NSTL/Luvall, J. 39-Env Sci, NEC

**NAG 5-51 Oregon State University 4305**  
Investigation of small-scale terrain effects within climate models  
*Period Obligations*  
05/15/80-12/31/85 FY85: \$70,000 TOTAL: \$325,529  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Deardorff, J. W. GSFC/Shukla, J. 31-Atmos Sci  
GSFC/Randall, D.

**NCA 2-586402 Oregon State University 4312**  
Nitrogen cycle dynamics across a transect of vegetation zones in Oregon  
*Period Obligations*  
09/20/84-12/31/85 FY85: \$14,528 TOTAL: \$14,528  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Myrold, D. D. ARC/Peterson, D. L. 55-Agriculture Sci  
Like, D. E. ARC/Matson, P. A.

**NAG 5-206 Oregon State University 4306**  
Diagnosis of seasonal climate change  
*Period Obligations*  
10/01/81-01/31/85 FY85: TOTAL: \$120,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Gates, W. L. GSFC/Randall, D. A. 31-Atmos Sci  
Esbensen, S. K.  
Kim, J. W.

**NCA 2-586501 Oregon State University 4313**  
Dynamics of transient baroclinic eddies in a Mars general circulation model  
*Period Obligations*  
10/01/84-09/30/85 FY85: TOTAL: \$13,352  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Barnes, J. ARC/Pollack, J. B. 31-Atmos Sci

**NAG 9-63 Oregon State University 4307**  
Chemical studies of lunar and meteoritic samples  
*Period Obligations*  
02/01/83-02/01/86 FY85: \$77,000 TOTAL: \$220,679  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Schmitt, R. A. JSC/Browne, I. D. 32-Geological Sci  
Hughes, S. S.

**NGL 38-002-053 Oregon State University 4314**  
Development and operation of an environmental remote sensing applications laboratory  
*Period Obligations*  
03/16/72-04/30/86 FY85: TOTAL: \$1,750,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Schrumph, B. J. HQ-EL/Tuyahov, A. J. 39-Env Sci, NEC

**NAGW 727 Oregon State University 4308**  
Possible dynamical mechanisms for the Martian polar warning phenomenon  
*Period Obligations*  
03/01/85-02/28/86 FY85: \$55,314 TOTAL: \$55,314  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Barnes, J. R. HQ-EL/Brinton, H. C. 46-Mech Engr  
HQ-EL/Brunk, W.

**NGT 38-058-800 Oregon State University 4315**  
NASA graduate student researchers program  
*Period Obligations*  
06/15/84-06/14/86 FY85: \$16,291 TOTAL: \$29,229  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Frenkel, R. HQ-LB/Owens, F. C. 32-Geological Sci

**NAGW 730 Oregon State University 4309**  
Temporal and spatial variability of sea surface winds  
*Period Obligations*  
02/01/85-01/31/86 FY85: \$53,356 TOTAL: \$53,356  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Chelton, D. B. HQ-EE/Patzert, W. C. 33-Oceanography

**NSG 7178 Oregon State University 4316**  
Examination of the suggested modes of origin of channels found on the Moon and Mars  
*Period Obligations*  
01/01/76-01/31/86 FY85: \$37,895 TOTAL: \$281,543  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Komar, P. D. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.



**NASA'S UNIVERSITY PROGRAM  
OREGON (Continued)**

**NAGW 222 University of Oregon - Eugene 4317**  
Far infrared measurements of trace constituents  
*Period Obligations*  
07/15/81-08/14/86 FY85: \$340,309 TOTAL: \$886,481  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Nolt, I. G. HQ-EE/Hampson, R. F. 31-Atmos Sci  
Radostitz, J. V. HQ-EE/Demore, W. B.

**NCA 2-587401 University of Oregon - Eugene 4318**  
Water vapor measurement for application to airborne infrared astronomy observations on the Kuiper astronomical observatory  
*Period Obligations*  
04/01/84-09/30/84 FY85: \$1,000 TOTAL: \$11,399  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Nolt, I. G. ARC/Wilson, D. E. 11-Astronomy  
Radostitz, J. V.

**PENNSYLVANIA**

**NAG 1-190 Carnegie - Mellon University 4319**  
Advanced automated control of aircraft in terminal  
*Period Obligations*  
06/01/81-11/30/85 FY85: \$139,553 TOTAL: \$492,206  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Siewiorek, D. P. LARC/Finelli, G. B. 45-Elec Engr  
Segall, Z. LARC/Palumbo, D. L.

**NAG 1-395 Carnegie - Mellon University 4320**  
Advanced detectors and signal processing for bubble memories  
*Period Obligations*  
09/01/83-08/31/85 FY85: TOTAL: \$100,001  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kryder, M. H. LARC/Hayes, P. J. 45-Elec Engr  
Greve, D. W.

**NAG 1-409 Carnegie - Mellon University 4321**  
Deformation measurements and modeling using optical data processing  
*Period Obligations*  
10/01/83-09/30/84 FY85: TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Casasent, D. LARC/Magee, C. J. 45-Elec Engr  
LARC/Stermer, R. L.

**NAG 1-575 Carnegie - Mellon University 4322**  
Novel, parallel architectures and algorithms for linear algebra processing  
*Period Obligations*  
04/01/85-03/31/86 FY85: \$85,000 TOTAL: \$85,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Casasent, D. P. LARC/Park, S. K. 29-Math/Computer, NEC  
LARC/Huck, F. O.

**NAG 1-612 Carnegie - Mellon University 4323**  
Response of joint dominated space structures  
*Period Obligations*  
08/15/85-10/14/85 FY85: \$10,000 TOTAL: \$10,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Griffin, J. H. LARC/Horta, L. G. 42-Astro Engr  
Bielak, J.

**NAG 3-5 Carnegie - Mellon University 4324**  
Electro-optical system controller and processor  
*Period Obligations*  
11/01/79-04/01/86 FY85: TOTAL: \$500,820  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Casasent, D. LERC/Baumbick, R. J. 45-Elec Engr  
LERC/Sellers, J. F.

**NAG 3-21 Carnegie - Mellon University 4325**  
Formulate a multi-dimensional, unsteady, turbulent, compressible, reacting flow code for Otto cycle codes and engines  
*Period Obligations*  
12/15/79-12/31/85 FY85: \$55,486 TOTAL: \$353,104  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Ramos, J. I. LERC/Shih, T. 46-Mech Engr  
LERC/Willis, E. A.

**NAG 3-166 Carnegie - Mellon University 4326**  
Turbulent flow in cryogenic face seals  
*Period Obligations*  
03/15/81-10/21/85 FY85: \$39,977 TOTAL: \$182,560  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hughes, W. F. LERC/Hendricks, R. C. 46-Mech Engr

**NAG 3-367 Carnegie - Mellon University 4327**  
Internship for graduate education in vibration  
*Period Obligations*  
01/09/83-01/06/86 FY85: \$40,029 TOTAL: \$142,295  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Griffin, J. H. LERC/Kielb, R. E. 46-Mech Engr

**NAG 3-404 Carnegie - Mellon University 4328**  
Gravity effects on liquid fuel pool fires: Ignition, flame spread and pool burning  
*Period Obligations*  
02/21/83-01/19/85 FY85: TOTAL: \$100,795  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Sirignano, W. A. LERC/Sacksteder, K. R. 49-Engr, NEC

**NAG 3-437 Carnegie - Mellon University 4329**  
Fundamental studies on a heat-driven lamp  
*Period Obligations*  
09/01/83-08/31/84 FY85: TOTAL: \$34,843  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Lawless, J. L. LERC/Chubb, D. L. 46-Mech Engr

**NAG 3-463 Carnegie - Mellon University 4330**  
Modeling the microstructural effects of hydrogen related fatigue crack growth in nickel based super alloy single crystals  
*Period Obligations*  
10/15/83-11/13/85 FY85: \$124,695 TOTAL: \$259,695  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Thompson, A. W. LERC/Dreshfield, R. L. 47-Materials Engr  
Williams, J. C.  
Sirignano, W. A.

**NASA'S UNIVERSITY PROGRAM**  
**PENNSYLVANIA (Continued)**

**NAG 3-614 Carnegie - Mellon University 4331**  
 Theoretical studies on a heat driven lamp  
*Period Obligations*  
 02/28/85-02/27/86 FY85: \$54,998 TOTAL: \$54,998  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lawless, J. L. LERC/Chubb, D. L. 46-Mech Engr

**NAS 1-17216 Carnegie - Mellon University 4332**  
 High strength/toughness cryogenic steel plates and bars  
*Period Obligations*  
 11/17/82-11/04/84 FY85: TOTAL: \$93,868  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bhat, G. K. LARC/Rush, H. F. 47-Materials Engr

**NAS 3-24225 Carnegie - Mellon University 4333**  
 Parallel processing element and system design evaluation  
*Period Obligations*  
 02/02/84-08/16/84 FY85: TOTAL: \$23,385  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hudak, J. J. LERC/Milner, E. J. 22-Computer Science  
 McConnell, T. LERC/Szuch, J. R.  
 Maier, T. A.

**NCC 3-37 Carnegie - Mellon University 4334**  
 Measurements in liquid fuel sprays  
*Period Obligations*  
 12/15/83-01/20/86 FY85: \$61,286 TOTAL: \$121,821  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Chigier, N. LERC/Tacina, R. R. 46-Mech Engr

**NGT 39-087-800 Carnegie - Mellon University 4335**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/81-08/31/84 FY85: TOTAL: \$40,590  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Fix, G. J. HQ-LB/Owens, F. C. 21-Mathematics

**NGT 39-087-801 Carnegie - Mellon University 4336**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/82-05/31/85 FY85: TOTAL: \$43,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Swedlow, J. L. HQ-LB/Owens, F. C. 46-Mech Engr

**NGT 39-087-802 Carnegie - Mellon University 4337**  
 NASA graduate student researchers program  
*Period Obligations*  
 09/01/83-08/31/86 FY85: TOTAL: \$30,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Moravec, H. P. LARC/Owens, F. C.  
 22-Computer Science

**NAG 1-200 Drexel University 4338**  
 Research on atmospheric volcanic emissions  
*Period Obligations*  
 06/01/81-05/31/84 FY85: TOTAL: \$256,905  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Friend, J. P. LARC/Fuller, W. H., Jr. 31-Atmos Sci  
 Zoller, W. H. LARC/McMaster, L. R.

**NAG 1-243 Drexel University 4339**  
 Research on output feedback and modal insensitivity design with optimality  
*Period Obligations*  
 01/01/82-12/31/85 FY85: \$50,000 TOTAL: \$201,585  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Calise, A. J. LARC/Price, D. B. 41-Aero Engr

**NAG 1-335 Drexel University 4340**  
 Theory of disordered solids  
*Period Obligations*  
 02/01/83-06/30/86 FY85: \$41,500 TOTAL: \$109,400  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bose, S. M. LARC/Clark, I. O. 19-Phys Sci, NEC

**NAG 1-480 Drexel University 4341**  
 Fracture analysis of notched composites  
*Period Obligations*  
 05/01/84-02/28/85 FY85: TOTAL: \$10,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Delale, F. LARC/Bigelow, C. A. 46-Mech Engr  
 LARC/Poe, C. C., Jr.

**NAG 3-183 Drexel University 4342**  
 Thermal stability of distillate hydrocarbon convergent-divergent nozzles  
*Period Obligations*  
 10/01/81-12/31/84 FY85: TOTAL: \$203,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Cohen, R. S. LERC/Bittker, D. A. 12-Chemistry  
 Cernansky, N. P.

**NAG 3-382 Drexel University 4343**  
 Combustion characteristics in the transition region of liquid fuel sprays  
*Period Obligations*  
 01/15/83-03/13/85 FY85: TOTAL: \$130,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Cernansky, N. P. LERC/Humenik, F. M. 46-Mech Engr  
 Namer, I.

**NAG 5-620 Drexel University 4344**  
 Improvements to the ECC ozonesonde  
*Period Obligations*  
 04/01/83-09/30/85 FY85: TOTAL: \$39,981  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Thornton, D. C. GSFC/Holland, A. C. 12-Chemistry

**NAGW 431 Drexel University 4345**  
 Stratospheric temperature and constituent distribution from inversion of thermal emission measurements of the Earth's limb  
*Period Obligations*  
 04/01/83-03/31/86 FY85: \$52,500 TOTAL: \$147,600  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Abbas, M. M. HQ-EE/Smith, M. A. 31-Atmos Sci  
 Kunde, V. G. HQ-EE/Demore, W. B.

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**NAGW 737 Drexel University 4346**  
Far infrared thermal emission spectroscopy of the stratosphere  
for measurement of temperature and trace gas distributions

<i>Period</i>	<i>Obligations</i>	
04/01/85-03/31/86	FY85: \$49,900	TOTAL: \$49,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Abbas, M. M.	HQ-EE/Smith, M. A.	31-Atmos Sci
	HQ-EE/Demore, W. B.	

**NAS 1-16428 Drexel University 4347**  
Scientific investigations for the Earth radiation budget experiment  
(ERBE)

<i>Period</i>	<i>Obligations</i>	
09/17/80-09/17/85	FY85: \$39,000	TOTAL: \$287,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
House, F. B.	LARC/Hall, J. B., Jr.	31-Atmos Sci
	LARC/Barkstrom, B. R.	

**NAS 2-11834 Drexel University 4348**  
Development of advanced guidance laws for air combat

<i>Period</i>	<i>Obligations</i>	
04/01/84-04/01/86	FY85:	TOTAL: \$95,824
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Calise, J.	ARC/Ardema, M. D.	46-Mech Engr
	ARC/Neuman, F.	

**NAS 8-34833 Drexel University 4349**  
Implementation of limited area and mesoscale prediction system  
software

<i>Period</i>	<i>Obligations</i>	
09/20/82-03/20/85	FY85: \$15,000	TOTAL: \$30,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
S'cnafer, A.	MSFC/Wilson, G. S.	31-Atmos Sci
Kreitzberg, C.	MSFC/Arnold, J. F.	
Perkey, D. J.		

**NSG 1606 Drexel University 4350**  
Deformation characteristics and failure modes of notched  
graphite polyimide composites at room and elevated tem-  
peratures

<i>Period</i>	<i>Obligations</i>	
07/01/79-12/31/84	FY85:	TOTAL: \$129,780
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Awerbuch, J.	LARC/Poe, C. C., Jr.	47-Materials Engr
Kamel, I.	LARC/Kennedy, J. M.	

**NCA 2-270301 Hahnemann Medical College & Hospital 4351**  
Neurological pathway of the emetic response: Afferent and  
efferent connections of the area postrema, nucleus of the solitary  
tract and parvocellular reticular formation

<i>Period</i>	<i>Obligations</i>	
03/01/83-08/31/84	FY85:	TOTAL: \$19,328
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rubertone, J. A.	ARC/Mehler, W. R.	51-Biological Sci

**NAG 5-630 Indiana University of Pennsylvania 4352**  
System electronics development for the hydrographic airborne  
laser sounder project

<i>Period</i>	<i>Obligations</i>	
02/01/85-07/31/85	FY85: \$28,458	TOTAL: \$28,458
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Berry, R. E.	GSFC/Krabill, W. B.	13-Physics
	GSFC/Hoge, F. E.	

**NAG 5-631 Indiana University of Pennsylvania 4353**  
System electronic development for the hydrographic airborne  
laser sounder project

<i>Period</i>	<i>Obligations</i>	
09/01/85-12/31/85	FY85: \$29,198	TOTAL: \$29,198
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Berry, R. E.	GSFC/Krabill, W. B.	13-Physics
	GSFC/Hoge, F. E.	

**NAG 1-432 Lafayette College 4354**  
Lightning induced response of aircraft interiors

<i>Period</i>	<i>Obligations</i>	
01/26/84-01/25/85	FY85:	TOTAL: \$11,509
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Demarest, L. R.	LARC/Pitts, F. L.	45-Elec Engr
	LARC/Zaepefl, K. P.	

**NAG 1-461 Lehigh University 4355**  
Free vorticity field-boundary layer conversions: Effect of boundary  
configuration and scale

<i>Period</i>	<i>Obligations</i>	
04/01/84-04/31/86	FY85: \$54,910	TOTAL: \$109,905
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rockwell, D. O.	LARC/Yu, J. C.	41-Aero Engr

**NAG 3-135 Lehigh University 4356**  
Coupled wake-oscillator models for mistuned blade flutter

<i>Period</i>	<i>Obligations</i>	
12/08/80-12/31/84	FY85:	TOTAL: \$99,010
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Johnson, S. H.	LERC/Lubomski, J. F.	46-Mech Engr
Owczarek, J. A.		

**NAG 9-45 Lehigh University 4357**  
Shock and thermal history of iron and chondritic meteorites

<i>Period</i>	<i>Obligations</i>	
04/01/83-03/31/86	FY85: \$98,000	TOTAL: \$289,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Goldstein, J. I.	JSC/Browne, I. D.	47-Materials Engr
Williams, D. B.	JSC	
Sellamuthu, R.		

**NAS 8-32951 Lehigh University 4358**  
Experiment for materials processing in space production of large  
particle size monodisperse latexes

<i>Period</i>	<i>Obligations</i>	
02/22/78-12/31/85	FY85: \$130,375	TOTAL: \$976,387
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Vanderhoff, J. W.	MSFC/Yost, V.	51-Biological Sci
	MSFC/Kornfield, D. M.	

**NAS 8-35989 Lehigh University 4359**  
Latex characterization

<i>Period</i>	<i>Obligations</i>	
03/15/85-03/14/86	FY85: \$15,200	TOTAL: \$15,200
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Micale, F. J.	MSFC/Snyder, R. S.	19-Phys Sci, NEC
	MSFC/Kornfield, D. M.	



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**NAG 3-555**      **Pennsylvania State Univ. - Univ. Park**      **4374**  
 3-D flow field in a turbine nozzle and rotor blade rows  
*Period*      *Obligations*  
 12/01/84-11/30/85      FY85:      TOTAL: \$89,350  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Lakshminarayana, B.      LARC/Povinelli, L. A.      41-Aero Engr  
    LARC/Schwab, J. R.

**NAG 3-575**      **Pennsylvania State Univ. - Univ. Park**      **4375**  
 Coupling between fluid dynamics and energy addition in arcjet and microwave thrusters  
*Period*      *Obligations*  
 10/15/84-10/14/85      FY85: \$25,000      TOTAL: \$25,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Micci, M. M.      LERC/Nakanishi, S.      19-Phys Sci, NEC

**NAG 3-628**      **Pennsylvania State Univ. - Univ. Park**      **4376**  
 X-ray diffraction studies of nurostrains in thermal barrier coatings  
*Period*      *Obligations*  
 03/15/85-03/14/86      FY85: \$34,877      TOTAL: \$34,877  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Ryba, E.      LERC/Miller, R. A.      47-Materials Engr

**NAG 5-100**      **Pennsylvania State Univ. - Univ. Park**      **4377**  
 High angular resolution X-ray and X-ray ultraviolet astronomy observations  
*Period*      *Obligations*  
 10/01/80-09/30/86      FY85: \$614,512      TOTAL: \$1,587,319  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Garmire, G. P.      GSFC/Early, L. J.      11-Astronomy  
    GSFC/Pless, R. H.

**NAG 5-184**      **Pennsylvania State Univ. - Univ. Park**      **4378**  
 Development of an interactive method for remote determination of surface moisture patterns  
*Period*      *Obligations*  
 06/01/81-11/30/85      FY85: \$19,913      TOTAL: \$172,639  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Carlson, T. N.      GSFC/Schmugge, T. J.      39-Env Sci, NEC  
    GSFC/Choudhury, B.

**NAG 5-303**      **Pennsylvania State Univ. - Univ. Park**      **4379**  
 Atmospheric collisional broadening motional narrowing and shifting  
*Period*      *Obligations*  
 03/15/83-12/31/85      FY85: \$48,731      TOTAL: \$72,608  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Herman, R. M.      GSFC/Susskind, J.      31-Atmos Sci

**NAG 5-334**      **Pennsylvania State Univ. - Univ. Park**      **4380**  
 Two-dimensional observations of selected stars  
*Period*      *Obligations*  
 07/01/83-06/30/84      FY85:      TOTAL: \$8,537  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Weedman, D. W.      GSFC/Kondo, Y.      11-Astronomy

**NAG 5-335**      **Pennsylvania State Univ. - Univ. Park**      **4381**  
 Blue soft X-ray candidates: Newly discovered active binary stars  
*Period*      *Obligations*  
 07/01/83-01/31/86      FY85: \$4,000      TOTAL: \$29,700  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Nousek, J. A.      GSFC/Kondo, Y.      11-Astronomy

**NAG 5-361**      **Pennsylvania State Univ. - Univ. Park**      **4382**  
 Photometry of diffuse sources with wide-field cameras  
*Period*      *Obligations*  
 08/15/83-12/31/85      FY85:      TOTAL: \$59,545  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Usher, P. D.      GSFC/Klinglesmith, D. A.      11-Astronomy  
    GSFC/Niedner, M. B.

**NAG 5-398**      **Pennsylvania State Univ. - Univ. Park**      **4383**  
 In-flow layer and air sea interactions in hurricanes  
*Period*      *Obligations*  
 03/15/84-03/14/86      FY85: \$45,990      TOTAL: \$89,582  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Frank, W. M.      GSFC/Rodgers, E. B.      31-Atmos Sci

**NAG 5-405**      **Pennsylvania State Univ. - Univ. Park**      **4384**  
 Investigation of gas streams in selected benaries  
*Period*      *Obligations*  
 07/01/84-12/31/85      FY85: \$5,000      TOTAL: \$10,400  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Huenemoerder, D. P.      GSFC/Kondo, Y.      11-Astronomy

**NAG 5-563**      **Pennsylvania State Univ. - Univ. Park**      **4385**  
 Coordinated observations of rational modulation in long period binary systems  
*Period*      *Obligations*  
 07/01/85-06/30/86      FY85: \$17,000      TOTAL: \$17,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Ramsey, L. W.      GSFC/Kondo, Y.      11-Astronomy  
 Huenemoerder, D. P.

**NAG 5-590**      **Pennsylvania State Univ. - Univ. Park**      **4386**  
 Research relative and the surface brightness of special galaxies  
*Period*      *Obligations*  
 07/15/85-07/14/86      FY85: \$11,488      TOTAL: \$11,488  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Weedman, D.      GSFC/Kondo, Y.      11-Astronomy

**NAG 5-606**      **Pennsylvania State Univ. - Univ. Park**      **4387**  
 Stratospheric studies by satellite, rocket and balloon observations  
*Period*      *Obligations*  
 05/15/82-02/14/86      FY85: \$15,029      TOTAL: \$82,029  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
 Olivero, J. J.      GSFC/Schmidlin, F. J.      31-Atmos Sci

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**NAG 6-7 Pennsylvania State Univ. - Univ. Park 4388**  
Investigate the influence of auroral energetic and electrodynamic coupling on middle atmosphere parameters  
*Period Obligations*  
09/01/80-11/30/85 FY85: \$65,000 TOTAL: \$306,460  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Mitchell, J. D. GSFC/Early, L. J. 19-Phys Sci, NEC  
Maynard, N. C. GSFC/Pless, R. H.  
Goldberg, R. A.

**NAG 8-457 Pennsylvania State Univ. - Univ. Park 4389**  
X-ray inverse Compton emission from the radio halo of M87  
*Period Obligations*  
11/01/83-10/31/84 FY85: TOTAL: \$11,377  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Feigelson, E. D. MSFC/Johnson, W. G. 11-Astronomy

**NAG 8-478 Pennsylvania State Univ. - Univ. Park 4390**  
The eridanus X-ray enhancement  
*Period Obligations*  
07/01/84-12/31/85 FY85: TOTAL: \$15,423  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Nousek, J. MSFC/Johnson, W. G. 11-Astronomy

**NAG 8-507 Pennsylvania State Univ. - Univ. Park 4391**  
The middle lobe of Centaurus A the very active galaxy Centaurus A  
*Period Obligations*  
01/01/85-12/31/85 FY85: \$7,985 TOTAL: \$7,985  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Feigelson, E. D. MSFC/Johnson, W. G. 11-Astronomy

**NAG 8-526 Pennsylvania State Univ. - Univ. Park 4392**  
AXAF CCD imaging spectrometer (ACIS)  
*Period Obligations*  
05/01/85-11/01/85 FY85: \$227,447 TOTAL: \$227,447  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Garmire, G. P. MSFC/Dailey, C. C. 11-Astronomy

**NAG 9-118 Pennsylvania State Univ. - Univ. Park 4393**  
Vection induced gastric dysrhythmias in motion sickness  
*Period Obligations*  
05/01/85-04/31/86 FY85: \$91,727 TOTAL: \$91,727  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Koch, K. JSC/Harris, J. W. 56-Medical Sciences

**NAGW 480 Pennsylvania State Univ. - Univ. Park 4394**  
Biophysical mechanism of differential growth during gravitropism  
*Period Obligations*  
09/01/83-12/31/84 FY85: TOTAL: \$40,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cosgrove, D. J. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAG10-16 Pennsylvania State Univ. - Univ. Park 4395**  
Biophysical mechanism of differential growth during gravitropism of stems  
*Period Obligations*  
01/22/85-11/01/85 FY85: \$45,000 TOTAL: \$45,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cosgrove, D. J. KSC/Knott, W. M. 32-Geological Sci

**NAS 5-26215 Pennsylvania State Univ. - Univ. Park 4396**  
Chemical analysis of vegetation samples  
*Period Obligations*  
07/11/80-01/11/84 FY85: TOTAL: \$101,132  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Smith, C. B. GSFC/Labovitz, M. L. 32-Geological Sci  
Baker, D. E. GSFC/Masuoka, E. J.

**NAS 5-26809 Pennsylvania State Univ. - Univ. Park 4397**  
HEAO-1 A-2 low energy data analysis  
*Period Obligations*  
11/15/81-09/30/84 FY85: TOTAL: \$184,600  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Garmire, G. GSFC/Bullock, G. D. 11-Astronomy

**NAS 8-33794 Pennsylvania State Univ. - Univ. Park 4398**  
Utilization of satellite data and dynamics in understanding global wheather phenomena  
*Period Obligations*  
08/15/80-03/31/85 FY85: TOTAL: \$448,306  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Clark, J. H. MSFC/Kaufman, J. W. 31-Atmos Sci  
Dutton, J. A. MSFC/Fichtl, G. H.

**NAS 8-33797 Pennsylvania State Univ. - Univ. Park 4399**  
Application of satellite data to study effect of latent heat release on cyclone  
*Period Obligations*  
07/01/80-03/31/85 FY85: TOTAL: \$203,931  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Clark, J. H. MSFC/Fichtl, G. H. 31-Atmos Sci  
MSFC/Kaufman, J. W.

**NAS 8-34535 Pennsylvania State Univ. - Univ. Park 4400**  
Study of pump cavitation damage  
*Period Obligations*  
09/28/81-11/30/83 FY85: TOTAL: \$175,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Billet, M. L. MSFC/Wimer, G., Jr. 46-Mech Engr  
MSFC/Gross, L. A.

**NAS 8-35446 Pennsylvania State Univ. - Univ. Park 4401**  
Fabricate five (5) hole probes and to provide the data reduction software  
*Period Obligations*  
05/02/85-08/02/85 FY85: \$15,000 TOTAL: \$15,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Treaster, A. L. MSFC/Norman, R. E. 13-Physics

**NAS 8-36150 Pennsylvania State Univ. - Univ. Park 4402**  
The utilization of satellite data and dynamics in understanding global weather  
*Period Obligations*  
11/05/84-11/05/86 FY85: \$332,694 TOTAL: \$332,694  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Clark, J. H. MSFC/Kaufman, J. W. 31-Atmos Sci  
Dutton, J. A. MSFC/Fichtl, G. H.

**NASA'S UNIVERSITY PROGRAM  
PENNSYLVANIA (Continued)**

**NAS 8-36194 Pennsylvania State Univ. - Univ. Park 4403**  
Research study entitled infrared back scattering properties of the atmospheric aerosol: Variations in time and space

Period	Obligations	
03/27/85-03/26/88	FY85: \$65,000	TOTAL: \$65,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bohren, C. F.	MSFC/Alexander, M. B.	19-Phys Sci, NEC
	MSFC/Fitzjarrald, D. E.	

**NAS 9-15566 Pennsylvania State Univ. - Univ. Park 4404**  
Purification and cultivation of human pituitary growth hormone secreting cells

Period	Obligations	
05/01/78-08/01/84	FY85:	TOTAL: \$353,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hymer, W. C.	JSC/Morrison, D. R.	56-Medical Sciences

**NAS 9-15584 Pennsylvania State Univ. - Univ. Park 4405**  
Kidney cell electrophoresis

Period	Obligations	
09/01/81-10/01/84	FY85:	TOTAL: \$385,934
Prin. Invest.	NASA Tech. Officer	CASE Category
Todd, P. W.	JSC/Morrison, D.	51-Biological Sci

**NAS 9-17416 Pennsylvania State Univ. - Univ. Park 4406**  
Study to develop new continuous flow electrophoresis flight experiments to repeat the pituitary cell separation and hormone secretion experiments conducted on STS 8

Period	Obligations	
12/01/84-12/01/87	FY85: \$55,000	TOTAL: \$55,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hymer, W.	JSC/Morrison, D.	56-Medical Sciences

**NAS 9-17431 Pennsylvania State Univ. - Univ. Park 4407**  
Kidney cell electrophoresis in microgravity

Period	Obligations	
05/01/85-05/01/88	FY85: \$74,000	TOTAL: \$74,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Todd, P.	JSC/Morrison, D.	59-Life Sci, NEC

**NCA 2-49 Pennsylvania State Univ. - Univ. Park 4408**  
Exploratory experiments on the shock wave vortex interaction phenomenon joint interchange

Period	Obligations	
06/01/85-05/31/87	FY85: \$30,000	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Settles, G. S.	ARC/Horstman, C. C.	46-Mech Engr

**NCA 2-589201 Pennsylvania State Univ. - Univ. Park 4409**  
Modeling of dust, gas and the meteorology over the North Atlantic and Africa

Period	Obligations	
09/01/82-08/31/84	FY85:	TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Carlson, T. N.	ARC/Toon, O. B.	31-Atmos Sci

**NCA 2-589301 Pennsylvania State Univ. - Univ. Park 4410**  
Understanding the influence of initial conditions, boundary conditions, topography, and irreversible processes on the intensity and mass transfer of tropopause folding events

Period	Obligations	
06/15/83-06/14/85	FY85:	TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Warner, T. T.	ARC/Pfister, L.	31-Atmos Sci
	ARC/Danielsen, E. F.	

**NCA 2-589502 Pennsylvania State Univ. - Univ. Park 4411**  
Mach number effects on 3-D shock wave/ turbulent boundary layer interaction regimes and sca

Period	Obligations	
12/01/84-11/30/86	FY85: \$40,000	TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Settles, G. S.	ARC/Horstman, C. C.	46-Mech Engr

**NCC 2-287 Pennsylvania State Univ. - Univ. Park 4412**  
Physiological and biochemical studies of growth hormone releasing factors

Period	Obligations	
10/01/83-10/31/85	FY85: \$45,000	TOTAL: \$85,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hymer, W. C.	ARC/Grindeland, R. E.	56-Medical Sciences

**NCC 2-316 Pennsylvania State Univ. - Univ. Park 4413**  
Radiative dynamic feedback studies for atmospheric particulates

Period	Obligations	
08/15/84-08/14/86	FY85: \$64,003	TOTAL: \$114,936
Prin. Invest.	NASA Tech. Officer	CASE Category
Carlson, T. N.	ARC/Toon, O. B.	31-Atmos Sci

**NCC 3-51 Pennsylvania State Univ. - Univ. Park 4414**  
Structures of premixed turbulent flames

Period	Obligations	
06/15/85-06/14/86	FY85: \$18,697	TOTAL: \$18,697
Prin. Invest.	NASA Tech. Officer	CASE Category
Santavicca, D. A.	LERC/Bulzan, D. L.	46-Mech Engr

**NGL 39-009-003 Pennsylvania State Univ. - Univ. Park 4415**  
Research on electron densities in upper ionosphere, including studies of rocket and separating capsule experimental techniques

Period	Obligations	
03/01/61-10/31/85	FY85: \$132,732	TOTAL: \$3,032,767
Prin. Invest.	NASA Tech. Officer	CASE Category
Nisbet, J. S.	HQ-EE/Lynch, J. T.	13-Physics
	HQ-EE/Shawhan, S.	

**NGT 39-009-802 Pennsylvania State Univ. - Univ. Park 4416**  
Training program in computational fluid dynamics

Period	Obligations	
01/01/81-08/26/86	FY85:	TOTAL: \$385,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Lakshminarayana, B.	HQ-RT/Graves, R. A., Jr.	41-Aero Engr

**NASA'S UNIVERSITY PROGRAM**  
**PENNSYLVANIA (Continued)**

**NGT 39-009-803 Pennsylvania State Univ. - Univ. Park 4417**  
 NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
09/01/81-08/31/84	FY85:	TOTAL: \$40,350
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Alexander, S. S.	HQ-LB/Owens, F. C.	32-Geological Sci

**NGT 39-009-805 Pennsylvania State Univ. - Univ. Park 4418**  
 NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
09/01/82-08/31/85	FY85:	TOTAL: \$41,040
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Alexander, S. S.	HQ-LB/Owens, F. C.	32-Geological Sci

**NGT 39-009-806 Pennsylvania State Univ. - Univ. Park 4419**  
 NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
07/01/83-06/30/86	FY85: \$18,000	TOTAL: \$48,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Peterson, G. W.	HQ-LB/Owens, F. C.	32-Geological Sci

**NGT 39-009-807 Pennsylvania State Univ. - Univ. Park 4420**  
 NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/83-05/31/85	FY85:	TOTAL: \$28,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nisbet, J. S.	HQ-LB/Owens, F. C.	45-Elec Engr

**NGT 39-009-808 Pennsylvania State Univ. - Univ. Park 4421**  
 NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/84-05/31/86	FY85: \$18,000	TOTAL: \$33,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Petersen, G. W.	HQ-LB/Owens, F. C.	41-Aero Engr

**NSG 3212 Pennsylvania State Univ. - Univ. Park 4422**  
 End wall flows in rotors and stators of a single stage compressor

<i>Period</i>	<i>Obligations</i>	
08/01/78-05/04/86	FY85:	TOTAL: \$424,399
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lakshminarayana, B.	LERC/Sockol, P. M.	41-Aero Engr

**NSG 3264 Pennsylvania State Univ. - Univ. Park 4423**  
 The boundary layer on compressor cascade blades

<i>Period</i>	<i>Obligations</i>	
06/04/79-11/25/85	FY85:	TOTAL: \$500,548
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Deutsch, S.	LERC/Sanger, N. L.	41-Aero Engr
Zierke, W. C.		

**NSG 3266 Pennsylvania State Univ. - Univ. Park 4424**  
 Three dimensional flow field inside compressor rotor passages, including blade boundary layers

<i>Period</i>	<i>Obligations</i>	
06/26/79-03/01/86	FY85: \$33,000	TOTAL: \$391,058
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lakshminarayana, B.	LERC/Sockol, P. M.	41-Aero Engr

**NSG 3301 Pennsylvania State Univ. - Univ. Park 4425**  
 Mass analysis of neutral particles and ions released during electrical breakdowns on spacecraft surfaces

<i>Period</i>	<i>Obligations</i>	
09/04/79-12/31/84	FY85:	TOTAL: \$324,909
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kendall, B. R.	LERC/Staskus, J. V.	13-Physics
	LERC/Stevens, N. J.	

**NSG 5205 Pennsylvania State Univ. - Univ. Park 4426**  
 Utilization of satellite data in mesoscale models

<i>Period</i>	<i>Obligations</i>	
09/01/77-05/31/86	FY85: \$59,828	TOTAL: \$489,758
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Warner, T.	GSFC/Uccellini, L. W.	31-Atmos Sci

**NSG 6004 Pennsylvania State Univ. - Univ. Park 4427**  
 Studies of mesospheric ionization

<i>Period</i>	<i>Obligations</i>	
10/01/75-01/31/86	FY85: \$110,000	TOTAL: \$702,664
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hale, L. C.	GSFC/Early, L. J.	19-Phys Sci, NEC
	GSFC/Pless, R. H.	

**NAGW 242 Temple University 4428**

The influence of varied gravito-inertial fields on the cardiac response of orb-weaving spiders

<i>Period</i>	<i>Obligations</i>	
09/01/81-11/30/84	FY85:	TOTAL: \$41,130
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Finck, A.	HQ-EB/Halstead, T. W.	51-Biological Sci

**NAG 3-435 University of Pennsylvania 4429**

Intercalated graphite fibers: Chemical aspects related to composite applications

<i>Period</i>	<i>Obligations</i>	
07/01/83-12/30/85	FY85:	TOTAL: \$50,028
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Forsman, W. C.	LERC/Banks, B. A.	12-Chemistry

**NAG 3-652 University of Pennsylvania 4430**

Integration of chemical reaction systems

<i>Period</i>	<i>Obligations</i>	
08/15/85-08/14/86	FY85: \$54,928	TOTAL: \$54,928
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Seider, W. D.	LERC/Bittker, D.	12-Chemistry

**NAG 5-468 University of Pennsylvania 4431**

Binary studies observed with the International Ultraviolet Explorer

<i>Period</i>	<i>Obligations</i>	
09/01/84-06/30/86	FY85: \$4,000	TOTAL: \$8,423
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Koch, R. H.	GSFC/Kondo, Y.	11-Astronomy



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PENNSYLVANIA (Continued)**

<b>NAG10-21</b>	<b>University of Pennsylvania</b>	<b>4432</b>
Plant morphogenesis and physiological behavior in relation to gravity		
<i>Period</i>	<i>Obligations</i>	
07/09/85-07/09/86	FY85: \$42,998	TOTAL: \$42,998
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brown, A.	KSC/Knott, W. M.	39-Env Sci, NEC

<b>NAS 5-28443</b>	<b>University of Pennsylvania</b>	<b>4433</b>
Provide High Energy Astronomical Observatory (HEAO)-1, A-2 low energy data analysis		
<i>Period</i>	<i>Obligations</i>	
10/01/84-01/31/86	FY85: \$70,000	TOTAL: \$70,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Garmire, G.	GSFC/Bullock, G. D.	11-Astronomy

<b>NAS 9-15531</b>	<b>University of Pennsylvania</b>	<b>4434</b>
<b>Development phase for Spacelab experiment</b>		
<i>Period</i>	<i>Obligations</i>	
03/01/78-08/01/85	FY85:	TOTAL: \$721,281
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brown, A. H.	JSC/Peck, E. E.	51-Biological Sci

<b>NAS 9-16634</b>	<b>University of Pennsylvania</b>	<b>4435</b>
Software additions/modifications for OSDS man model development		
<i>Period</i>	<i>Obligations</i>	
06/01/82-06/01/85	FY85:	TOTAL: \$515,141
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Badler, N. I.	JSC/Woolford, B. J.	42-Astro Engr

<b>NAS 9-17003</b>	<b>University of Pennsylvania</b>	<b>4436</b>
Laser anthropometric measurement system algorithm development		
<i>Period</i>	<i>Obligations</i>	
09/01/83-10/01/86	FY85: \$133,244	TOTAL: \$263,244
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Altschuler, M. D.	JSC/Woolford, B. J.	
		29-Math/Cmputer.NEC

<b>NAS 9-17238</b>	<b>University of Pennsylvania</b>	<b>4437</b>
Biochemical and hematological evaluation of definition of oxygen tolerance in man		
<i>Period</i>	<i>Obligations</i>	
01/01/85-09/30/86	FY85: \$294,954	TOTAL: \$294,954
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lambertsen, C. J.	JSC/Waligora, J. M.	59-Life Sci, NEC

<b>NAS 9-17239</b>	<b>University of Pennsylvania</b>	<b>4438</b>
OSDS man-modeling capabilities		
<i>Period</i>	<i>Obligations</i>	
11/06/84-11/06/85	FY85: \$299,000	TOTAL: \$299,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Badler, N. I.	JSC/Brown, J. W.	42-Astro Engr

<b>NGR 39-010-149</b>	<b>University of Pennsylvania</b>	<b>4439</b>
Plant morphogenesis under conditions of hypo- and hypergravia		
<i>Period</i>	<i>Obligations</i>	
09/01/73-03/31/85	FY85:	TOTAL: \$555,623
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brown, A. H.	HQ-EB/Halstead, T. W.	51-Biological Sci

<b>NGT 39-090-800</b>	<b>University of Pennsylvania</b>	<b>4440</b>
NASA graduate student researchers program		
<i>Period</i>	<i>Obligations</i>	
03/01/85-02/28/86	FY85: \$15,180	TOTAL: \$15,180
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shen, B.	HQ-LE/Owens, F. C.	19-Phys Sci, NEC

<b>NAG 1-597</b>	<b>University of Pittsburgh</b>	<b>4441</b>
Fabrication technique of hot film surface gases for skin friction and boundary layer separation detection measurements		
<i>Period</i>	<i>Obligations</i>	
06/19/85-02/18/86	FY85: \$59,474	TOTAL: \$59,474
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Meiksin, Z. H.	LARC/Holmes, H. K.	45-Elec Engr
Guvenc, M. G.	LARC/Gray, D. L.	

<b>NAG 2-53</b>	<b>University of Pittsburgh</b>	<b>4442</b>
A survey of nearby stars for the perturbative effects of extrasolar planetary systems		
<i>Period</i>	<i>Obligations</i>	
09/01/80-11/30/85	FY85: \$100,000	TOTAL: \$369,995
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gatewood, G. D.	ARC/Black, D. C.	11-Astronomy
Stein, J. W.	ARC/Rathjen, S.	

<b>NAG 2-155</b>	<b>University of Pittsburgh</b>	<b>4443</b>
<b>Physiology of cat vestibular system efferent neurons</b>		
<i>Period</i>	<i>Obligations</i>	
01/15/82-01/31/86	FY85:	TOTAL: \$244,170
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tomko, D. L.	ARC/Dauntun, N. G.	51-Biological Sci
	ARC/Corcoran, M. L.	

<b>NAG 3-603</b>	<b>University of Pittsburgh</b>	<b>4444</b>
Low temp luminescence Raman scattering and RBS/channeling of B SIC-CVD films		
<i>Period</i>	<i>Obligations</i>	
01/13/85-01/12/86	FY85: \$20,985	TOTAL: \$20,985
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Choyke, W. J.	LERC/Powell, J. A.	13-Physics
	LERC/Matus. L. G.	

<b>NAG 3-606</b>	<b>University of Pittsburgh</b>	<b>4445</b>
Computer simulation of a pilot in helicopter control loops		
<i>Period</i>	<i>Obligations</i>	
04/30/85-09/01/86	FY85: \$49,942	TOTAL: \$49,942
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Vogt, W. B.	LERC/Mihaloeuw, J.	49-Engr, NEC
Mickle, M. H.		

<b>NAG 5-249</b>	<b>University of Pittsburgh</b>	<b>4446</b>
Observations of edge on Seyferts		
<i>Period</i>	<i>Obligations</i>	
08/01/82-08/31/85	FY85: \$7,000	TOTAL: \$24,771
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Turnshek, D. A.	GSFC/Kondo, Y.	11-Astronomy
Hazard, C.		

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**PENNSYLVANIA (Continued)**

**NAG 5-378**                      **University of Pittsburgh**                      **4447**  
Measurement of reflectance and polarization of vegetative and soil surfaces  
*Period*                                      *Obligations*  
10/15/83-01/14/85                      FY85: \$15,000                      TOTAL: \$36,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Hapke, B.                      GSFC/Deering, D. W.                      19-Phys Sci, NEC

**NAG 5-553**                      **University of Pittsburgh**                      **4448**  
Regarding extended exposures of a bright quasar at very high redshift  
*Period*                                      *Obligations*  
06/01/85-05/31/86                      FY85: \$15,680                      TOTAL: \$15,680  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Hazard, C.                      GSFC/Kondo, Y.                      11-Astronomy  
Malkan, M.

**NAG 5-609**                      **University of Pittsburgh**                      **4449**  
Sounding rocket study of N<sub>2</sub>O, NO, and other trace constituents in the upper stratosphere and mesosphere  
*Period*                                      *Obligations*  
07/01/82-04/30/86                      FY85: \$142,400                      TOTAL: \$474,752  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Zipf, E. C.                      GSFC/Early, L. J.                      13-Physics  
Erdman, P. W.                      GSFC/Pless, R. H.

**NAG 6-2**                      **University of Pittsburgh**                      **4450**  
Studies of the physics and chemistry of the terrestrial atmosphere  
*Period*                                      *Obligations*  
10/01/79-12/31/85                      FY85: \$156,003                      TOTAL: \$932,618  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Zipf, E. C.                      GSFC/Early, L. J.                      19-Phys Sci, NEC  
   GSFC/Pless, R. H.

**NAS 3-22662**                      **University of Pittsburgh**                      **4451**  
Presentation of symposia and reports in advanced electrical propulsion  
*Period*                                      *Obligations*  
09/23/80-11/30/85                      FY85:                      TOTAL: \$180,646  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
McWilliams, P. A.                      LERC/Kerslake, W. R.                      42-Astro Engr

**NAS 5-25013**                      **University of Pittsburgh**                      **4452**  
Study of infrared detection by intracavity upconversion  
*Period*                                      *Obligations*  
05/09/78-01/01/84                      FY85:                      TOTAL: \$228,440  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Falk, J.                      GSFC/Kostiuk, T.                      13-Physics  
   GSFC/Ogilvie, K. W.

**NASW 3403**                      **University of Pittsburgh**                      **4453**  
Operation of a NASA Industrial Application Center (IAC)  
*Period*                                      *Obligations*  
04/01/80-03/31/86                      FY85: \$284,700                      TOTAL: \$1,584,922  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
McWilliams, P. A.                      HQ-LG/Bivins, R. G.                      22-Computer Science  
   HQ-LG/Ault, L. A.

**NGL 39-011-030**                      **University of Pittsburgh**                      **4454**  
Studies of excitation and collision deactivation of measurable A3 state of nitrogen in the aurora and day airglow  
*Period*                                      *Obligations*  
05/07/65-10/31/85                      FY85:                      TOTAL: \$1,386,441  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Zipf, E. C.                      HQ-EL/Brinton, H. C.                      31-Atmos Sci  
   HQ-EL/Brunk, W. E.

**NGR 39-011-137**                      **University of Pittsburgh**                      **4455**  
Dissociative recombination coefficients for planetary ionospheric ions  
*Period*                                      *Obligations*  
07/28/71-08/31/85                      FY85:                      TOTAL: \$486,934  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Biondi, M. A.                      HQ-EL/Brinton, H. C.                      11-Astronomy  
   HQ-EZ/Weiler, E. J.

**NGR 39-011-161**                      **University of Pittsburgh**                      **4456**  
Laboratory studies of kinetics of tropospheric and stratospheric aircraft pollutant reactions using atomic and molecular resonance fluorescence detection  
*Period*                                      *Obligations*  
06/03/73-02/28/86                      FY85: \$98,734                      TOTAL: \$839,057  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Kaufman, F.                      HQ-EE/Hampson, R. F.                      12-Chemistry  
   HQ-EE/Demore, W. B.

**NGT 39-010-800**                      **University of Pittsburgh**                      **4457**  
NASA graduate student researchers program  
*Period*                                      *Obligations*  
05/01/84-04/30/86                      FY85: \$15,000                      TOTAL: \$27,400  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Pettit, F.                      HQ-LB/Owens, F. C.                      47-Materials Engr

**NSG 7147**                      **University of Pittsburgh**                      **4458**  
Photometric analyses of Mariner 10 images of Venus and Mercury  
*Period*                                      *Obligations*  
06/23/75-11/30/85                      FY85: \$26,025                      TOTAL: \$257,515  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Hapke, B.                      HQ-EL/Boyce, J. M.                      11-Astronomy  
   HQ-EL/Holt, H. E.

**NAG 5-343**                      **Villanova University**                      **4459**  
Ultraviolet observations relative to astronomical sources  
*Period*                                      *Obligations*  
07/15/83-09/14/86                      FY85: \$23,000                      TOTAL: \$77,900  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Sion, E. M.                      GSFC/Kondo, Y.                      11-Astronomy  
Downes, R.  
Liebert, J.

**NAG 5-382**                      **Villanova University**                      **4460**  
Coordinated ultraviolet spectroscopy and optical photometry of selected cool giants  
*Period*                                      *Obligations*  
01/01/84-06/31/87                      FY85: \$21,900                      TOTAL: \$34,334  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Guinan, E. F.                      GSFC/Kondo, Y.                      11-Astronomy  
Maloney, F. P.

# **NASA'S UNIVERSITY PROGRAM RHODE ISLAND**

## **RHODE ISLAND**

**NAG 1-258 Brown University 4461**  
Parameter estimation techniques for distributed systems

Period	Obligations	
06/01/82-11/30/84	FY85:	TOTAL: \$163,027
Prin. Invest.	NASA Tech. Officer	CASE Category
Banks, H. T.	LARC/Armstrong, E. S.	21-Mathematics
	LARC/Taylor, L. W., Jr.	

**NAG 1-379 Brown University 4462**  
Studies in turbulent eddy structures relevant to jet noise

Period	Obligations	
07/01/83-10/15/85	FY85: \$55,000	TOTAL: \$106,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Liu, J. T.	LARC/Norum, T. D.	13-Physics

**NAG 1-517 Brown University 4463**  
Feedback control of distributed continuum models

Period	Obligations	
09/01/84-09/30/85	FY85: \$78,450	TOTAL: \$85,585
Prin. Invest.	NASA Tech. Officer	CASE Category
Banks, H. T.	LARC/Armstrong, E. S.	21-Mathematics
	LARC/Taylor, L. W.	

**NAG 5-526 Brown University 4464**  
Theoretical studies of resource enhance stimulated Raman scattering frequency double laser wavelengths

Period	Obligations	
07/01/85-06/30/86	FY85: \$25,000	TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Lawandy, N. M.	GSFC/Degnan, J. J.	13-Physics

**NAG 9-77 Brown University 4465**  
Large-scale impact: Effects on early planetary evolution

Period	Obligations	
02/01/84-01/31/86	FY85:	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Parmentier, E. M.	JSC/Phinney, W. C.	32-Geological Sci
Grieve, R. A.		

**NAG 9-109 Brown University 4466**  
Experimental metamorphic studies of iron sulfide silicate reactions in enstatite chondrites

Period	Obligations	
05/01/85-04/30/86	FY85: \$45,000	TOTAL: \$45,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hess, P. C.	JSC/Browne, I. D.	47-Materials Engr

**NAGW 28 Brown University 4467**  
Remote sensing information applied to geological studies of planets

Period	Obligations	
02/14/80-11/30/85	FY85: \$89,001	TOTAL: \$584,695
Prin. Invest.	NASA Tech. Officer	CASE Category
Pieters, C. M.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAGW 137 Brown University 4468**  
Geologic processes on the Galilean satellites: Impact cratering, volcanism and teetonism volcanism and tectronism'

Period	Obligations	
03/01/81-02/28/86	FY85: \$70,000	TOTAL: \$411,997
Prin. Invest.	NASA Tech. Officer	CASE Category
Head, J. W.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAGW 454 Brown University 4469**  
Surface reactions on Venus

Period	Obligations	
04/15/83-09/14/84	FY85:	TOTAL: \$100,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Grieve, R. A.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/French, B. M.	

**NAGW 527 Brown University 4470**  
Upgrading of computing and image processing facilities in planetary studies at Brown University

Period	Obligations	
01/01/84-12/31/84	FY85:	TOTAL: \$213,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Head, J. W., III	HQ-EL/Quaide, W. L.	32-Geological Sci
	HQ-EL/Boyce, J. M.	

**NAGW 657 Brown University 4471**  
Quant temperature measurement in laser-heated, diamond-cell experiment

Period	Obligations	
09/01/84-11/31/85	FY85:	TOTAL: \$58,837
Prin. Invest.	NASA Tech. Officer	CASE Category
Goettel, K. A.	HQ-E/Rosendhal, J. D.	32-Geological Sci

**NAGW 705 Brown University 4472**  
Planetary impact processes

Period	Obligations	
03/01/85-10/30/85	FY85: \$135,000	TOTAL: \$135,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Schultz, P. H.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAGW 713 Brown University 4473**  
Venus data analysis of radar images and global data sets

Period	Obligations	
03/01/85-10/31/85	FY85: \$50,000	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Head, J. W., III	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAGW 745 Brown University 4474**  
High-pressure optical properties of solar hydrogen

Period	Obligations	
05/01/85-04/30/86	FY85: \$25,000	TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Goettel, K. A.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NASA'S UNIVERSITY PROGRAM**  
**RHODE ISLAND (Continued)**

**NAGW 748 Brown University 4475**  
 Reflectance experiment laboratory  
*Period Obligations*  
 05/01/85-02/28/86 FY85: \$45,989 TOTAL: \$45,989  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Pieters, C. M. HQ-/Boyce, J. 32-Geological Sci

**NAS 5-26729 Brown University 4476**  
 Utilization of (HCMM) heat capacity mapping mission thermal data for the discrimination of volcanic and Eolian geological units  
*Period Obligations*  
 09/21/83-07/20/84 FY85: TOTAL: \$65,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Head, J. W. GSFC/Broderick, J. C. 32-Geological Sci  
 Mouginiis-mark, P.

**NASW 3508 Brown University 4477**  
 Support Brown University regional planetary data center  
*Period Obligations*  
 04/14/81-10/31/85 FY85: \$27,997 TOTAL: \$103,683  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Schultz, P. H. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NASW 3913 Brown University 4478**  
 Maintenance and upgrading of reflectance experiment laboratory  
*Period Obligations*  
 02/01/84-08/31/85 FY85: TOTAL: \$42,198  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Pieters, C. HQ-EL/Quaide, W. L. 32-Geological Sci  
 HQ-EL/Boyce, J. M.

**NASW 4048 Brown University 4479**  
 Characterization of surface geology using mapping spectrometer data  
*Period Obligations*  
 01/15/85-01/14/86 FY85: \$25,000 TOTAL: \$25,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Pieters, C. M. HQ-EE/Evans, D. L. 32-Geological Sci

**NGR 40-002-088 Brown University 4480**  
 Analysis of Martian geologic features of Earth analogs  
*Period Obligations*  
 10/20/69-11/30/85 FY85: \$345,000 TOTAL: \$1,412,336  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Head, J. W. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NGR 40-002-116 Brown University 4481**  
 Lunar basins processes and structure  
*Period Obligations*  
 02/20/73-01/31/86 FY85: \$80,000 TOTAL: \$1,041,839  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Head, J. W. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NGT 40-002-801 Brown University 4482**  
 NASA graduate student researchers program  
*Period Obligations*  
 09/01/85-08/31/86 FY85: \$13,500 TOTAL: \$13,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Su, C. H. HQ-LE/Owens, F. C. 21-Mathematics

**NGT 40-002-802 Brown University 4483**  
 NASA graduate student researchers program  
*Period Obligations*  
 09/01/85-08/31/86 FY85: \$17,800 TOTAL: \$17,800  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lawandy, N. HQ-LE/Owens, F. C. 13-Physics

**NSG 1617 Brown University 4484**  
 Analytical and numerical gas dynamics  
*Period Obligations*  
 06/01/79-03/31/85 FY85: TOTAL: \$231,708  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Sirovich, L. LARC/Townsend, J. C. 41-Aero Engr

**NSG 7569 Brown University 4485**  
 Analysis of rocks and substrate as revealed in Viking Lander images  
*Period Obligations*  
 04/01/79-09/30/84 FY85: TOTAL: \$324,980  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Head, J. W. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NSG 7570 Brown University 4486**  
 Surface processes on Mars and its satellites with emphasis on cratering, volcanism and the evolution of Valles Marineris  
*Period Obligations*  
 04/01/79-09/30/85 FY85: \$83,900 TOTAL: \$455,288  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Head, J. W. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NSG 7589 Brown University 4487**  
 Experimental investigation of basalt-C-O-H-S gas equilibria and fumarolic alteration on Mars  
*Period Obligations*  
 03/01/79-01/31/86 FY85: \$46,000 TOTAL: \$293,346  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Rutherford, M. J. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NSG 7605 Brown University 4488**  
 Endogenic processes affect in the surfaces of Ganymede and Callisto  
*Period Obligations*  
 05/01/79-02/28/86 FY85: \$50,000 TOTAL: \$308,381  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Parmentier, E. M. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

# **NASA'S UNIVERSITY PROGRAM** **RHODE ISLAND (Continued)**

**NAG 1-519 University of Rhode Island 4489**  
 Fiber optic pressure sensors in skin-friction measurements  
*Period Obligations*  
 09/01/84-09/30/85 FY85: TOTAL: \$42,457  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Cuomo, F. W. LARC/Zuckerwar, A. J. 13-Physics  
 Letcher, S. V. LARC/Holmes, H. K.

**NAS 5-27559 University of Rhode Island 4490**  
 Application remote sensing to the management of Rhode Island coastal and land resources  
*Period Obligations*  
 02/23/83-08/23/85 FY85: TOTAL: \$18,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 West, N. GSFC/Blodget, H. W. 39-Env Sci, NEC  
 Richardson, K. A. GSFC/Kerber, A. G.

**NSG 7414 University of Rhode Island 4491**  
 Paleoflow processes and formation of Martian channels  
*Period Obligations*  
 10/01/77-12/31/85 FY85: \$30,425 TOTAL: \$161,116  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Boothroyd, J. C. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

## **SOUTH CAROLINA**

**NAG 5-218 Citadel Military College of S C 4492**  
 Abundances of the elements in sharp-lined normal late B-type stars  
*Period Obligations*  
 03/01/82-07/31/85 FY85: TOTAL: \$21,129  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Adelman, S. J. GSFC/Kondo, Y. 11-Astronomy  
 Leckrone, D. S.

**NAG 1-316 Clemson University - Clemson 4493**  
 An investigation of the accuracy of finite difference methods on the solution of linear elasticity problems  
*Period Obligations*  
 01/01/83-05/31/85 FY85: TOTAL: \$32,452  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Goree, J. G. LARC/Whitcomb, J. D. 46-Mech Engr  
 Bauld, N. R., Jr. LARC/O'Brien, T. K.

**NAG 3-538 Clemson University - Clemson 4494**  
 Reduction of incidence loss in low pressure stages of turbofan engine  
*Period Obligations*  
 03/25/84-06/30/85 FY85: TOTAL: \$49,932  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Yang, T. LERC/Steinke, R. J. 41-Aero Engr  
 LERC/Roelke, R. J.

**NAG 5-232 Clemson University - Clemson 4495**  
 Critical review of remote methods for the precision measurement of rainfall parameters  
*Period Obligations*  
 06/01/82-01/31/85 FY85: TOTAL: \$71,640  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Ulbrich, C. W. GSFC/Thiele, O. W. 31-Atmos Sci

**NAS 8-36460 Clemson University - Clemson 4496**  
 Software development to support control of robot arc welding  
*Period Obligations*  
 04/08/85-02/08/86 FY85: \$31,793 TOTAL: \$31,793  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Sias, F. R. MSFC/Jones, C. S. 29-Math/Computer, NEC  
 MSFC/Fernandez, K. R.

**NCC 1-93 Clemson University - Clemson 4497**  
 An in plane shear material property test for composite laminates  
*Period Obligations*  
 03/04/85-02/28/86 FY85: \$44,620 TOTAL: \$44,620  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Kennedy, J. M. LARC/Farley, G. L. 47-Materials Engr  
 LARC/Baker, D. J.

**NCC 5-27 Clemson University - Clemson 4498**  
 Monitoring and predicting tropical cyclone formation  
*Period Obligations*  
 03/01/83-08/31/85 FY85: TOTAL: \$70,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Gentry, R. C. GSFC/Adler, R. F. 31-Atmos Sci  
 GSFC/Simpson, J. M.

**NSG 1297 Clemson University - Clemson 4499**  
 Crack growth in bonded isotropic and orthotropic elastic half-planes  
*Period Obligations*  
 04/01/76-10/15/85 FY85: \$40,000 TOTAL: \$433,788  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Goree, J. G. LARC/Poe, C. C., Jr. 46-Mech Engr  
 LARC/Kennedy, J. M.

**NAG 8-31 Furman University 4500**  
 Data base management modelling and implementation for SSME historical test data  
*Period Obligations*  
 03/15/85-09/15/85 FY85: \$13,446 TOTAL: \$13,446  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Abernethy, K. MSFC/Monk, J. C. 22-Computer Science  
 Smith, M. MSFC/Key, N.

**NAS 5-28741 University of South Carolina 4501**  
 Application of LANDSAT t m images to assess circulation and dispersion in coastal regions  
*Period Obligations*  
 07/18/85-11/17/87 FY85: \$225,033 TOTAL: \$225,033  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Kjerfve, B. GSFC/Oseroff, H. 39-Env Sci, NEC  
 Jensen, J. R.

## NASA'S UNIVERSITY PROGRAM SOUTH CAROLINA (Continued)

**NGT 41-002-800 University of South Carolina 4502**  
NASA graduate student researchers program

Period	Obligations	
05/16/83-05/14/86	FY85: \$18,000	TOTAL: \$48,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Peters, W. H.	HQ-LB/Owens, F. C.	47-Materials Engr

**NSG 7504 University of South Carolina 4503**  
Application of LANDSAT data in South Carolina

Period	Obligations	
12/01/78-05/31/85	FY85:	TOTAL: \$500,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roberson, R. E.	HQ-ET/Vitale, J. A.	39-Env Sci, NEC

**NAS 5-28766 South Dakota State University 4509**  
Modeling energy flow and nutrients cycle in natural grassland ecosystems w/aid of thematic mapper data

Period	Obligations	
08/07/85-09/06/88	FY85: \$499,447	TOTAL: \$499,447
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lewis, J. K.	GSFC/Oseroff, H.	39-Env Sci, NEC
Miller, L. D.	GSFC/Stuart, L.	
Parton, W. J., Jr.		

**NAG 2-296 University of South Dakota 4510**  
Bimannual control analysis of AFTI f16 test flights

Period	Obligations	
07/01/84-12/31/85	FY85:	TOTAL: \$22,764
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Berkhout, J.	ARC/Berry, D. T.	49-Engr, NEC

## SOUTH DAKOTA

**NAG 1-307 South Dakota School of Mines & Tech 4504**  
Theoretical development of Monte Carlo codes for modeling cumulus cloud fields

Period	Obligations	
11/01/82-02/28/85	FY85:	TOTAL: \$59,180
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Welch, R. M.	LARC/Wielicki, B. A.	31-Atmos Sci

**NAG 1-463 South Dakota School of Mines & Tech 4505**  
Numerical storm electrification studies in support of NASA F106 storm hazards program

Period	Obligations	
03/15/84-03/14/86	FY85: \$65,000	TOTAL: \$117,407
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Helsdon, J. H., Jr.	LARC/Crabill, N. L.	31-Atmos Sci
	LARC/Pitts, F. L.	

**NAG 1-542 South Dakota School of Mines & Tech 4506**  
Modeling and parameterization of horizontally inhomogeneous cloud radiative properties

Period	Obligations	
12/06/84-12/05/85	FY85: \$25,004	TOTAL: \$25,004
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Welch, R. M.	LARC/Wielicki, B. A.	31-Atmos Sci

**NAG 5-386 South Dakota School of Mines & Tech 4507**  
Rain volume estimation over areas using satellite and radar data

Period	Obligations	
01/01/84-11/30/85	FY85: \$104,000	TOTAL: \$196,870
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Doneaud, A. A.	GSFC/Negri, A. J.	31-Atmos Sci
Vonder Haar, T. H.		

**NAG 9-22 South Dakota School of Mines & Tech 4508**  
Petrologic and stratigraphic studies of planetary regoliths

Period	Obligations	
02/01/82-02/01/86	FY85: \$123,000	TOTAL: \$486,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Papike, J. J.	JSC/Browne, I. D.	32-Geological Sci

## TENNESSEE

**NAG 8-25 Fisk University 4511**  
Thermal characterization of crystals

Period	Obligations	
07/05/84-10/03/85	FY85:	TOTAL: \$66,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Silberman, E.	MSFC/Kroes, R. L.	13-Physics
	MSFC/Osborn, L.	

**NAS 8-36166 Fisk University 4512**  
U.S. And foreign alloy cross reference data bases

Period	Obligations	
02/15/85-02/14/86	FY85: \$206,229	TOTAL: \$206,229
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Springer, J. M.	MSFC/Key, C. F.	22-Computer Science
Morgan, S. H.	MSFC/Scollard, J. H.	

**NSG 8060 Fisk University 4513**  
Optical characterization of zero-gravity grown crystals

Period	Obligations	
04/17/78-08/13/85	FY85:	TOTAL: \$417,261
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Silberman, E.	MSFC/Kroes, R. L.	13-Physics
Morgan, S. H.	MSFC/Williams, J.	
Springer, J.		

**NAG 3-458 Tennessee State University 4514**  
Undergraduate and graduate aerospace fellowship program (MINE)

Period	Obligations	
08/01/83-07/31/85	FY85: \$5,649	TOTAL: \$39,649
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Malkani, M. J.	LERC/Montegani, F.	46-Mech Engr
Isibor, E. I.		

**NASA'S UNIVERSITY PROGRAM**  
**TENNESSEE (Continued)**

**NAG 3-561 Tennessee State University 4515**  
 NASA aerospace fellowship grant for undergraduate and graduate students

Period	Obligations
05/30/84-08/30/84	FY85: TOTAL: \$35,554
Prin. Invest.	NASA Tech. Officer CASE Category
Malkani, M. J.	LERC/Allen, H. 46-Mech Engr
Isibor, E. I.	

**NAG 8-22 Tennessee State University 4516**  
 Research support for school of engineering and technology

Period	Obligations
08/25/83-01/31/86	FY85: \$339,340 TOTAL: \$794,972
Prin. Invest.	NASA Tech. Officer CASE Category
Chadhuri, D. K.	MSFC/Randall, J. I. 41-Aero Engr
Chad Huri, D. I.	MSFC/Walker, R. J.

**NAG 8-30 Tennessee State University 4517**  
 Superplastic forging of Inconel 718

Period	Obligations
02/01/85-01/31/86	FY85: \$111,293 TOTAL: \$111,293
Prin. Invest.	NASA Tech. Officer CASE Category
Isibor, E. I.	MSFC/Randall, J. L. 45-Elec Engr
McCain, W. S.	MSFC/Walker, R. J.

**NAS 8-35672 Tennessee Technological University 4518**  
 Srb filament wound case material property study

Period	Obligations
02/15/84-04/15/85	FY85: TOTAL: \$26,789
Prin. Invest.	NASA Tech. Officer CASE Category
Tolbert, R. N.	MSFC/Bullock, T. 49-Engr, NEC
	MSFC/Bugg, F.

**NAG 1-303 University of Tennessee - Knoxville 4519**  
 Investigation and development of traveling belt skin friction transducers with a potential use in cryogenic wind tunnel models for the national transonic facility

Period	Obligations
12/15/82-09/30/85	FY85: \$40,000 TOTAL: \$130,000
Prin. Invest.	NASA Tech. Officer CASE Category
Wu, J. M.	LARC/Lawing, P. L. 41-Aero Engr
Vakili, A.	LARC/Kilgore, R. A.

**NAG 1-319 University of Tennessee - Knoxville 4520**  
 Development of finite element methods for aerothermal flowfield analysis of high Mach number

Period	Obligations
12/17/82-12/16/85	FY85: TOTAL: \$98,952
Prin. Invest.	NASA Tech. Officer CASE Category
Baker, A. J.	LARC/Wieting, A. R. 49-Engr, NEC

**NAG 1-513 University of Tennessee - Knoxville 4521**  
 Flight expert system files for onboard Fault monitoring and diagnosis

Period	Obligations
08/13/84-10/12/85	FY85: \$121,986 TOTAL: \$221,986
Prin. Invest.	NASA Tech. Officer CASE Category
Ali, M.	ARC/Abbott, K. H. 99-Multi-Discip
	LARC/Schutte, P. C.

**NAG 1-527 University of Tennessee - Knoxville 4522**  
 Nonlinear acoustic wave propagation in atmosphere

Period	Obligations
11/01/84-10/31/85	FY85: \$31,146 TOTAL: \$31,146
Prin. Invest.	NASA Tech. Officer CASE Category
Hariharan, S. I.	LARC/Watson, W. R. 31-Atmos Sci
	LARC/Preisser, J. S.

**NAG 1-560 University of Tennessee - Knoxville 4523**  
 Development of a flow field visualization device utilizing projected smoke trails

Period	Obligations
03/01/85-02/28/86	FY85: \$39,658 TOTAL: \$39,658
Prin. Invest.	NASA Tech. Officer CASE Category
Steinhoff, J. S.	LARC/Kassel, P. C. 49-Engr, NEC

**NAG 2-193 University of Tennessee - Knoxville 4524**  
 Study of flow field on transonic adaptive wind tunnel wall with controlled segmented compartments

Period	Obligations
10/01/82-12/31/85	FY85: TOTAL: \$65,000
Prin. Invest.	NASA Tech. Officer CASE Category
Wu, J. M.	ARC/Schairer, E. T. 41-Aero Engr
Collins, F. G.	

**NAG 3-18 University of Tennessee - Knoxville 4525**  
 A coordinate mapping procedure for the computation of variable duct acoustics

Period	Obligations
01/01/80-02/14/85	FY85: TOTAL: \$122,289
Prin. Invest.	NASA Tech. Officer CASE Category
White, J. W.	LERC/Baumeister, K. J. 41-Aero Engr
	LERC/Rice, E. J.

**NAG 3-83 University of Tennessee - Knoxville 4526**  
 Time dependent local heat transfer coefficient variations during the ice accretion process on aircraft surfaces

Period	Obligations
07/14/80-04/30/84	FY85: TOTAL: \$68,715
Prin. Invest.	NASA Tech. Officer CASE Category
Keshock, E. G.	LERC/Shaw, R. J. 41-Aero Engr

**NAG 3-239 University of Tennessee - Knoxville 4527**  
 An experimental investigation of thermoacoustic convection heat transfer phenomenon in zero-gravity environment

Period	Obligations
12/10/81-06/08/84	FY85: TOTAL: \$73,805
Prin. Invest.	NASA Tech. Officer CASE Category
Parang, M.	LERC/Chai, A. T. 19-Phys Sci, NEC

**NAG 3-364 University of Tennessee - Knoxville 4528**  
 An experimental investigation of secondary flows in variable area S-shaped duct

Period	Obligations
12/14/82-03/11/86	FY85: \$75,076 TOTAL: \$220,683
Prin. Invest.	NASA Tech. Officer CASE Category
Wu, J. M.	LERC/Hingst, W. R. 41-Aero Engr
Vakili, A.	

**NASA'S UNIVERSITY PROGRAM**  
**TENNESSEE (Continued)**

**NAG 3-370 University of Tennessee - Knoxville 4529**  
Measurement of spray combustion processes

<i>Period</i>	<i>Obligations</i>	
12/05/82-11/03/85	FY85:	TOTAL: \$154,929
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Peters, C. E.	LERC/Oldenburg, J. R.	46-Mech Engr
Farmer, W. M.		

**NAG 3-385 University of Tennessee - Knoxville 4530**  
Development research of soot particle generator

<i>Period</i>	<i>Obligations</i>	
12/30/82-12/31/85	FY85:	TOTAL: \$150,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lewis, J. W.	LERC/Anderson, R. C.	13-Physics
Few, J. D.	LERC/Lesco, D. J.	

**NAG 3-398 University of Tennessee - Knoxville 4531**  
Development of a multi-grid transonic potential flow code for cascades

<i>Period</i>	<i>Obligations</i>	
02/25/83-04/24/86	FY85:	TOTAL: \$39,950
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Steinberg, J. S.	LERC/Chang, S. C.	41-Aero Engr

**NAG 3-617 University of Tennessee - Knoxville 4532**  
Mainstream turbulence influence on the instantaneous and mean flow development in a rectangular turning duct

<i>Period</i>	<i>Obligations</i>	
02/28/85-02/27/86	FY85: \$97,558	TOTAL: \$97,558
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Crawford, R.	LERC/Gladden, H. J.	41-Aero Engr
Peters, C.	LERC/Simoneau, R. J.	

**NAG 9-58 University of Tennessee - Knoxville 4533**  
Petrologic studies of meteorite groups

<i>Period</i>	<i>Obligations</i>	
04/01/83-03/31/86	FY85: \$31,000	TOTAL: \$85,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McSween, H. Y.	JSC/Browne, I. D.	32-Geological Sci
Misra, K. C.		

**NAG 9-62 University of Tennessee - Knoxville 4534**  
The evolution of ancient planetary crusts

<i>Period</i>	<i>Obligations</i>	
02/01/83-02/01/86	FY85: \$78,400	TOTAL: \$208,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Taylor, L. A.	JSC/Browne, I. D.	32-Geological Sci
Hunter, R.		
Shervais, J.		

**NAG 9-73 University of Tennessee - Knoxville 4535**  
Planetary crust/mantle evolution evidenced in kimberlites

<i>Period</i>	<i>Obligations</i>	
02/01/84-01/31/86	FY85: \$28,000	TOTAL: \$55,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Taylor, L. A.	JSC/Phinney, W. C.	32-Geological Sci
Salpas, P.		

**NAGW 125 University of Tennessee - Knoxville 4536**  
Spectroscopy of methane for the atmospheres of the outer planets

<i>Period</i>	<i>Obligations</i>	
03/01/81-08/31/85	FY85:	TOTAL: \$120,350
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fox, K.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAS 3-23278 University of Tennessee - Knoxville 4537**  
Gas flow environment and heat transfer nonrotating 30 program

<i>Period</i>	<i>Obligations</i>	
04/14/82-12/01/84	FY85:	TOTAL: \$466,584
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schulz, R.	LERC/Gladden, H. J.	41-Aero Engr
Harwell, K. E.		
Wu, J. M.		

**NAS 8-33386 University of Tennessee - Knoxville 4538**  
Theoretical analysis of baroclinic flows

<i>Period</i>	<i>Obligations</i>	
08/13/79-09/30/84	FY85:	TOTAL: \$173,021
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Antar, B. N.	MSFC/Fowles, W. W.	31-Atmos Sci
	MSFC/Leslie, F.	

**NAS 8-34320 University of Tennessee - Knoxville 4539**  
Hydrogen LSC waves for laser powered propulsion

<i>Period</i>	<i>Obligations</i>	
07/08/81-06/30/85	FY85:	TOTAL: \$208,320
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Keefer, D. R.	MSFC/Jones, L. W.	13-Physics
	MSFC/Richmond, B. J.	

**NAS 8-34426 University of Tennessee - Knoxville 4540**  
Gravity Probe-B error modeling and analysis

<i>Period</i>	<i>Obligations</i>	
06/24/81-11/30/83	FY85:	TOTAL: \$60,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hung, J. C.	MSFC/McMillion, J. M.	42-Astro Engr
	MSFC/Hypes, M. C.	

**NAS 8-34627 University of Tennessee - Knoxville 4541**  
Low level gusts gradient program and aviation workshop effort

<i>Period</i>	<i>Obligations</i>	
11/20/81-03/31/84	FY85:	TOTAL: \$155,831
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Frost, W.	MSFC/Turner, R. E.	31-Atmos Sci
	MSFC/Sloan, J. C.	

**NAS 8-35347 University of Tennessee - Knoxville 4542**  
Low level crusts gradient program and aviation workshop effort

<i>Period</i>	<i>Obligations</i>	
05/10/83-03/19/85	FY85: \$35,000	TOTAL: \$120,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Frost, W.	MSFC/Campbell, W.	31-Atmos Sci



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**NAS 8-35973 University of Tennessee - Knoxville 4543**  
Natural environment analysis

Period	Obligations	
06/08/84-06/07/87	FY85: \$73,000	TOTAL: \$148,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Frost, W.	MSFC/Arnold, J.	31-Atmos Sci
	MSFC/Hill, K.	

**NAS 8-36177 University of Tennessee - Knoxville 4544**  
Rb-57 gust gradient program

Period	Obligations	
09/20/84-09/19/85	FY85:	TOTAL: \$70,250
Prin. Invest.	NASA Tech. Officer	CASE Category
Frost, W.	MSFC/Campbell, W.	31-Atmos Sci
	MSFC/Smith, G. T.	

**NCA 2-772301 University of Tennessee - Knoxville 4545**  
The treatment of vortex sheets in compressible potential flows

Period	Obligations	
02/01/83-09/30/84	FY85:	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Steinhoff, J.	ARC/Leonard, A.	41-Aero Engr

**NGL 43-001-140 University of Tennessee - Knoxville 4546**  
Experimental investigations of opaque minerals and cooling history of lunar rocks

Period	Obligations	
09/01/73-01/31/84	FY85:	TOTAL: \$567,357
Prin. Invest.	NASA Tech. Officer	CASE Category
Hunter, R. H.	JSC/Dietrich, J. W.	11-Astronomy

**NGT 43-001-804 University of Tennessee - Knoxville 4547**  
NASA graduate student researchers program

Period	Obligations	
04/01/82-06/30/85	FY85:	TOTAL: \$45,342
Prin. Invest.	NASA Tech. Officer	CASE Category
Antar, B. N.	HQ-LB/Owens, F. C.	21-Mathematics

**NGT 43-001-805 University of Tennessee - Knoxville 4548**  
NASA graduate student researchers program

Period	Obligations	
06/01/82-05/31/85	FY85:	TOTAL: \$43,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Taylor, L. A.	HQ-LB/Owens, F. C.	32-Geological Sci

**NGT 43-001-806 University of Tennessee - Knoxville 4549**  
NASA graduate student researchers program

Period	Obligations	
06/10/85-06/09/86	FY85:	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Taylor, L.	HQ-LE/Owens, F. C.	32-Geological Sci

**NAS 2-11586 University of Tennessee - Memphis 4550**  
Regulation of erythropoiesis in mice during space flight

Period	Obligations	
10/01/82-03/31/87	FY85: \$108,000	TOTAL: \$214,800
Prin. Invest.	NASA Tech. Officer	CASE Category
Lange, R. D.	ARC/Ferandin, J. A.	51-Biological Sci
	ARC/Sebesta, P. A.	

**NAG 1-483 Vanderbilt University 4551**  
Role of freestream turbulence scale in subsonic flow separation

Period	Obligations	
07/01/84-06/30/86	FY85: \$54,564	TOTAL: \$119,801
Prin. Invest.	NASA Tech. Officer	CASE Category
Potter, J. L.	LARC/Harvey, W. D.	41-Aero Engr
Seebaugh, W. R.	LARC/Stainback, P. C.	

**NAG 1-549 Vanderbilt University 4552**  
Studies of rarefied hypersonic flows

Period	Obligations	
12/01/84-09/15/86	FY85: \$97,447	TOTAL: \$97,447
Prin. Invest.	NASA Tech. Officer	CASE Category
Potter, J. L.	LARC/Moss, J. N.	41-Aero Engr
	LARC/Freeman, D. C.	

**NAG 2-301 Vanderbilt University 4553**  
Weightlessness simulation physiological changes in fast and slow muscle

Period	Obligations	
06/01/84-05/31/86	FY85: \$50,000	TOTAL: \$100,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Dettbarn, W. D.	ARC/Holton, E. M.	51-Biological Sci

**NAG 5-176 Vanderbilt University 4554**  
Chromospheric emission of selected stars: Ionization structure of expanding atmospheres

Period	Obligations	
05/01/81-06/30/84	FY85:	TOTAL: \$13,574
Prin. Invest.	NASA Tech. Officer	CASE Category
Eaton, J. A.	GSFC/Kondo, Y.	11-Astronomy

**NAG 5-397 Vanderbilt University 4555**  
Ultraviolet observations of unusually chromospherically active giant

Period	Obligations	
03/01/84-05/31/86	FY85: \$20,998	TOTAL: \$30,998
Prin. Invest.	NASA Tech. Officer	CASE Category
Fekel, F. C., Jr.	GSFC/Kondo, Y.	11-Astronomy
Simon, T.		

**NAS 8-32695 Vanderbilt University 4556**  
Solar radiation on glasses

Period	Obligations	
06/27/78-06/30/85	FY85:	TOTAL: \$80,935
Prin. Invest.	NASA Tech. Officer	CASE Category
Kinser, D. L.	MSFC/Nichols, R. L.	47-Materials Engr
	MSFC/Strong, J. S.	

**NAS 8-34676 Vanderbilt University 4557**  
The microstructural analysis of Nb and Nb-Ge drop tube specimens

Period	Obligations	
10/15/81-04/30/85	FY85:	TOTAL: \$184,332
Prin. Invest.	NASA Tech. Officer	CASE Category
Bayuzick, R. J.	MSFC/Gardner, L. B.	47-Materials Engr
	MSFC/Williams, J. R.	



**NASA'S UNIVERSITY PROGRAM  
TEXAS (Continued)**

**NAS 9-16898 Baylor College of Medicine 4573**  
Influence of spaceflight on erythrokinetics in men  
*Period* *Obligations*  
05/01/83-04/30/85 FY85: TOTAL: \$74,600  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dunn, C. D. JSC/Leach, C. S. 51-Biological Sci

**NAS 9-17173 Baylor College of Medicine 4574**  
Clinical validation of multiwire gamma camera (MGC) imagery  
*Period* *Obligations*  
07/01/84-09/30/87 FY85: TOTAL: \$24,961  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Roberts, R. JSC/Lacy, J. L. 56-Medical Sciences

**NAS 9-17255 Baylor College of Medicine 4575**  
Pharmaceutical testing of f1/4 isotopes  
*Period* *Obligations*  
11/01/84-11/30/86 FY85: \$82,113 TOTAL: \$82,113  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Leblanc, A. JSC/Newkirk, K. 56-Medical Sciences

**NAS 9-17256 Baylor College of Medicine 4576**  
In vivo nuclear magnetic resonance imaging  
*Period* *Obligations*  
10/01/84-12/30/85 FY85: \$88,080 TOTAL: \$88,080  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Leblanc, A. JSC/Johnson, P. 56-Medical Sciences

**NAG 9-61 Pan American University 4577**  
Sensitivity analysis of the suits vegetation reflectance model  
*Period* *Obligations*  
06/01/83-12/31/84 FY85: TOTAL: \$36,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lemaster, E. W. JSC/Browne, I. D. 39-Env Sci, NEC  
Chance, J. E.

**NAS 9-16899 Prairie View A&M University 4578**  
Five task comprehensive research project  
*Period* *Obligations*  
06/13/83-12/31/85 FY85: TOTAL: \$414,391  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Greaux, A. E. JSC/Kennedy, R. C. 42-Astro Engr

**NAS 9-17136 Prairie View A&M University 4579**  
Charged particle radiation damage to material and VLSI devices  
*Period* *Obligations*  
05/30/84-02/28/86 FY85: TOTAL: \$365,606  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Knighton, T. JSC/Herman, C. F. 13-Physics  
Luke, C. T.

**NAS 9-17406 Prairie View A&M University 4580**  
Products resulting from interactions of atomic oxygen with spacecraft materials  
*Period* *Obligations*  
08/01/85-07/31/88 FY85: \$65,000 TOTAL: \$65,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wang, F. C. JSC/Leger, L. 47-Materials Engr

**NAG 1-516 Rice University 4581**  
Optimal flight trajectories in the presence of wind shear  
*Period* *Obligations*  
08/09/84-09/30/85 FY85: TOTAL: \$51,895  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Miele, A. LARC/Bowles, R. L. 41-Aero Engr  
LARC/Morello, S. A.

**NAG 5-262 Rice University 4582**  
High dispersion ultraviolet spectra abundances of carbon, silicon and magnesium in selected galactic regions  
*Period* *Obligations*  
08/01/82-02/28/86 FY85: \$34,200 TOTAL: \$77,400  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dufour, R. J. GSFC/Kondo, Y. 11-Astronomy  
Mathis, J. S.  
Walborn, N. R.

**NAG 5-302 Rice University 4583**  
Magnetospheric physics research using Dynamics Explorer data  
*Period* *Obligations*  
04/01/83-11/30/85 FY85: TOTAL: \$72,541  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Reiff, P. H. GSFC/Bullock, G. D. 13-Physics  
GSFC/Hoffman, R. A.

**NAG 8-485 Rice University 4584**  
Quantitative C spectrophotometry of comet Halley 2  
*Period* *Obligations*  
07/01/84-09/30/85 FY85: TOTAL: \$31,863  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
O'dell, C. R. MSFC/Owens, J. H. 11-Astronomy

**NAG 9-88 Rice University 4585**  
Gas-rich materials in carbonaceous chondrites  
*Period* *Obligations*  
04/01/84-05/01/86 FY85: \$10,000 TOTAL: \$25,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Heymann, D. JSC/Browne, I. D. 32-Geological Sci

**NAG 9-100 Rice University 4586**  
Origin of the solar system: Isotopic and chemical anomalies  
*Period* *Obligations*  
05/01/85-04/30/86 FY85: \$35,000 TOTAL: \$35,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Clayton, D. D. JSC/Browne, I. D. 11-Astronomy

**NAG 9-119 Rice University 4587**  
Dynamic response of structures with moving masses  
*Period* *Obligations*  
07/01/85-06/30/86 FY85: \$70,000 TOTAL: \$70,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Akin, J. E. JSC/MacKey, A. C. 47-Materials Engr  
Spanos, P. D.

**NASA'S UNIVERSITY PROGRAM**  
**TEXAS (Continued)**

**NAG 9-123** **Rice University** **4588**  
Imagery and spectroscopy of supernova remnants and other stellar ejected nebulae  
*Period* *Obligations*  
08/16/85-08/15/86 FY85: \$22,230 TOTAL: \$22,230  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dufour, R. J. JSC/Parker, R. A. 47-Materials Engr

**NAS 5-28764** **Rice University** **4595**  
Analysis of pioneer, Venus and related interplanetary data  
*Period* *Obligations*  
07/01/85-07/01/86 FY85: \$50,000 TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Cloutier, P. GSFC/Taylor, H. A., Jr. 31-Atmos Sci  
GSFC/Gagnon, B.

**NAGW 69** **Rice University** **4589**  
Electron beam-plasma interactions in the laboratory and in the ionosphere  
*Period* *Obligations*  
06/01/80-02/28/86 FY85: \$37,000 TOTAL: \$266,409  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bernstein, W. HQ-EE/Benson, R. F. 19-Phys Sci, NEC  
HQ-EZ/Schmerling, E. R.

**NAS 8-33199** **Rice University** **4596**  
Measurement of high temperature properties of liquid and solid tungsten  
*Period* *Obligations*  
11/27/78-03/01/85 FY85: \$34,750 TOTAL: \$294,557  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Margrave, J. L. MSFC/Fallon, R. A. 47-Materials Engr  
MSFC/Ethridge, E. C.

**NAGW 168** **Rice University** **4590**  
Rotational and convective plasma flow in the Jovian magnetosphere  
*Period* *Obligations*  
03/01/81-03/01/84 FY85: TOTAL: \$90,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hill, T. W. HQ-EE/Lynch, J. T. 13-Physics  
HQ-EE/Evans, N.

**NAS 9-16596** **Rice University** **4597**  
Imagery and spectroscopy of supernova remnants and HII regions  
*Period* *Obligations*  
05/01/82-08/15/84 FY85: TOTAL: \$30,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Dufour, R. J. JSC/Parker, R. A. 11-Astronomy

**NAGW 379** **Rice University** **4591**  
Theoretical study of pulsar magnetospheres  
*Period* *Obligations*  
11/01/82-10/31/85 FY85: TOTAL: \$84,371  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Michel, F. C. HQ-E/Rosendhal, J. D. 11-Astronomy  
HQ-EP/Schrom, J.

**NAS 9-16773** **Rice University** **4598**  
Historical chronology manuscript relating to history of chronological development of space transportation system from its inception through end of orbital flight test phase  
*Period* *Obligations*  
12/09/82-06/30/86 FY85: TOTAL: \$279,650  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Van Helden, A. JSC/Grotberg, M. 73-History

**NAGW 384** **Rice University** **4592**  
Determination sizes of extragalactic HII regions  
*Period* *Obligations*  
10/15/82-08/31/86 FY85: \$50,000 TOTAL: \$147,313  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
O'dell, C. R. HQ-EZ/Stencel, R. E. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NAS 9-17145** **Rice University** **4599**  
Development of algorithms for space robotics  
*Period* *Obligations*  
05/14/84-11/15/85 FY85: \$41,000 TOTAL: \$51,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
De Figueiredo, R. J. JSC/Arndt, G. D. 29-Math/Computer, NEC

**NAGW 482** **Rice University** **4593**  
Three-dimensional structure of the Earth's electromagnetic field  
*Period* *Obligations*  
07/01/83-04/30/86 FY85: \$163,147 TOTAL: \$495,402  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Michel, F. C. HQ-EE/Butler, D. M. 39-Env Sci, NEC  
HQ-EE/Hudson, R. D.

**NAS 9-17273** **Rice University** **4600**  
Stand alone computer aid system  
*Period* *Obligations*  
12/01/84-12/01/85 FY85: \$50,000 TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Gordon, W. E. JSC/Jost, R. J. 13-Physics

**NAS 5-23338** **Rice University** **4594**  
Theoretical predictions and data analysis  
*Period* *Obligations*  
02/04/74-04/30/85 FY85: TOTAL: \$173,074  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Cloutier, P. A. GSFC/Taylor, H. A., Jr. 13-Physics  
GSFC/Gagnon, B.

**NCC 9-10** **Rice University** **4601**  
Nonparametric and mixture for crop classification and estimation in a reactive computing environment  
*Period* *Obligations*  
07/01/83-07/01/85 FY85: TOTAL: \$49,990  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Scott, D. W. JSC/Browne, I. D. 29-Math/Computer, NEC

**NASA'S UNIVERSITY PROGRAM  
TEXAS (Continued)**

**NGL 44-006-012** **Rice University** **4602**  
Laboratory development of solar wind heavy-ion mass spectrometer

Period	Obligations
06/27/84-06/30/85	FY85: TOTAL: \$1,793,736
Prin. Invest.	NASA Tech. Officer
Freeman, J. W.	HQ-EE/Lynch, J. T.
	HQ-EE/Shawharn, S. D.
CASE Category	13-Physics

**NGR 44-006-137** **Rice University** **4603**  
Analysis of data on the magnetotail and solar wind

Period	Obligations
12/29/70-02/28/86	FY85: \$107,801 TOTAL: \$863,230
Prin. Invest.	NASA Tech. Officer
Reiff, P. H.	HQ-EE/Lynch, J. T.
	HQ-EE/Shawhan, S. D.
CASE Category	13-Physics

**NGT 44-006-802** **Rice University** **4604**  
NASA graduate student researchers program

Period	Obligations
09/01/82-08/31/85	FY85: TOTAL: \$34,100
Prin. Invest.	NASA Tech. Officer
Leeman, W. P.	HQ-LB/Owens, F. C.
CASE Category	32-Geological Sci

**NGT 44-006-803** **Rice University** **4605**  
NASA graduate student researchers program

Period	Obligations
06/01/83-05/31/84	FY85: TOTAL: \$12,300
Prin. Invest.	NASA Tech. Officer
Rabson, T. A.	HQ-LB/Owens, F. C.
CASE Category	45-Elec Engr

**NGT 44-006-804** **Rice University** **4606**  
NASA graduate student researchers program

Period	Obligations
04/15/83-05/31/86	FY85: \$13,300 TOTAL: \$34,900
Prin. Invest.	NASA Tech. Officer
Burrus, C. S.	HQ-LB/Owens, F. C.
CASE Category	45-Elec Engr

**NGT 44-006-805** **Rice University** **4607**  
NASA graduate student researchers program

Period	Obligations
06/01/84-05/31/86	FY85: \$15,050 TOTAL: \$27,424
Prin. Invest.	NASA Tech. Officer
Reiff, P. H.	HQ-LB/Owens, F. C.
CASE Category	13-Physics

**NGT 44-006-806** **Rice University** **4608**  
NASA graduate student researchers program

Period	Obligations
06/01/84-05/31/86	FY85: \$13,300 TOTAL: \$24,600
Prin. Invest.	NASA Tech. Officer
De Figuieriredo H, R. J.	HQ-LB/Owens, F. C.
CASE Category	45-Elec Engr

**NGT 44-006-807** **Rice University** **4609**  
NASA graduate student researchers program

Period	Obligations
06/01/85-05/31/86	FY85: \$13,300 TOTAL: \$13,300
Prin. Invest.	NASA Tech. Officer
Burrus, C. S.	HQ-LE/Owens, F. C.
CASE Category	45-Elec Engr

**NSG 7043** **Rice University** **4610**  
Research on planetary atmospheres

Period	Obligations
03/01/74-12/31/85	FY85: \$70,000 TOTAL: \$522,624
Prin. Invest.	NASA Tech. Officer
Chamberlain, J. W.	HQ-EL/Brinton, H. C.
	HQ-EL/Quaide, W. L.
CASE Category	31-Atmos Sci

**NSG 7361** **Rice University** **4611**  
Origin of the solar system: The relationship of isotopic and chemical anomalies in meteorites Earth, Moon and planets to astrophysical models of their origin

Period	Obligations
08/01/77-07/31/85	FY85: TOTAL: \$167,764
Prin. Invest.	NASA Tech. Officer
Clayton, D. D.	HQ-EL/Boyce, J. M.
	HQ-EL/Holt, H. E.
CASE Category	32-Geological Sci

**NSG 7386** **Rice University** **4612**  
Study of ion-molecule reactions of importance in planetary atmosphere

Period	Obligations
09/01/77-02/28/86	FY85: \$51,510 TOTAL: \$324,139
Prin. Invest.	NASA Tech. Officer
Stebbins, R. F.	HQ-EL/Brinton, H. C.
	HQ-EL/Brunk, W. E.
CASE Category	31-Atmos Sci

**NAG 1-317** **Southern Methodist University** **4613**  
An experimental study of the properties of surface pressure fluctuations in strong adverse pressure gradient turbulent boundary layers

Period	Obligations
12/01/82-09/30/85	FY85: TOTAL: \$36,515
Prin. Invest.	NASA Tech. Officer
Simpson, R. L.	LARC/Brooks, T. F.
CASE Category	46-Mech Engr

**NAG 5-298** **Southern Methodist University** **4614**  
Constraints on lithospheric structure from satellite potential field data

Period	Obligations
03/01/83-05/31/85	FY85: TOTAL: \$70,344
Prin. Invest.	NASA Tech. Officer
Phillips, R. J.	GSFC/Kouns, C. W.
Burke, K. C.	GSFC/Frey, H.
CASE Category	32-Geological Sci

**NAGW 459** **Southern Methodist University** **4615**  
Planetary interior modeling and tectonic implications

Period	Obligations
06/01/83-12/31/85	FY85: \$60,000 TOTAL: \$158,502
Prin. Invest.	NASA Tech. Officer
Phillips, R. J.	HQ-EL/Boyce, J. M.
	HQ-EL/Holt, H.
CASE Category	32-Geological Sci

**NCC 9-9** **Southern Methodist University** **4616**  
Crop area estimation based on remotely sensed data with an accurate but costly subsample

Period	Obligations
01/01/83-08/31/85	FY85: TOTAL: \$84,962
Prin. Invest.	NASA Tech. Officer
Gunst, R. F.	JSC/Browne, I. D.
CASE Category	21-Mathematics

**NASA'S UNIVERSITY PROGRAM**  
**TEXAS (Continued)**

**NAGW 394** **Sul Ross State University** **4617**  
 Photogeologic and remote sensing analysis of planetary volcanism and tectonics  
*Period* *Obligations*  
 12/01/82-05/31/84 FY85: TOTAL: \$15,198  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Whitford-stark, H. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 605** **Sul Ross State University** **4618**  
 Galelean satellite mapping program  
*Period* *Obligations*  
 03/01/84-05/31/85 FY85: TOTAL: \$10,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Whitford-stark, H. HQ-EL/Boyce, J. M. 32-Geological Sci

**NAG 1-112** **Texas A&M University** **4619**  
 The role of coherent structures in the generation of noise for subsonic jets  
*Period* *Obligations*  
 11/01/80-10/31/84 FY85: TOTAL: \$129,975  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Morrison, G. L. LARC/Yu, J. C. 13-Physics

**NAG 1-309** **Texas A&M University** **4620**  
 An environmental investigation of the effects of surface imperfections on the performance of two-single-engine general aviation aircraft with low drag  
*Period* *Obligations*  
 11/04/82-11/03/85 FY85: TOTAL: \$85,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Ward, D. T. LARC/Holmes, B. J. 41-Aero Engr  
 Korkan, K. D.

**NAG 1-344** **Texas A&M University** **4621**  
 Basic studies in configurational aerodynamics for low speed aircraft  
*Period* *Obligations*  
 04/01/83-01/15/86 FY85: \$220,150 TOTAL: \$677,191  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Ward, D. T. LARC/Stickle, J. W. 41-Aero Engr  
 Miley, S. J. LARC/Holmes, B. J.  
 Ostowari, C.

**NAG 1-417** **Texas A&M University** **4622**  
 Heating requirements and non-adiabatic surface effects for models in the national transonic facility  
*Period* *Obligations*  
 10/01/83-01/31/85 FY85: TOTAL: \$32,177  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 MacHa, J. M. LARC/Johnson, C. B. 41-Aero Engr  
 LARC/Kilgore, R. A.

**NAG 1-443** **Texas A&M University** **4623**  
 An in-situ study in scanning electron microscope (SEM) of delamination in several graphite/epoxy composite material systems  
*Period* *Obligations*  
 02/01/84-01/31/86 FY85: \$40,026 TOTAL: \$65,026  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Bradley, W. L. LARC/Crews, J. H., Jr. 47-Materials Engr  
 LARC/Johnston, N. J.

**NAG 3-129** **Texas A&M University** **4624**  
 Investigations into the injection molding of PMR15 polyimide  
*Period* *Obligations*  
 01/01/81-05/31/84 FY85: TOTAL: \$92,458  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Lee, S. W. LERC/Serafina, T. T. 47-Materials Engr  
 LERC/Vannucci, R. D.

**NAG 3-181** **Texas A&M University** **4625**  
 Compressible and incompressible fluid seals: Influence on rotordynamic response and stability  
*Period* *Obligations*  
 06/01/81-01/15/86 FY85: \$175,000 TOTAL: \$584,570  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Childs, D. W. LERC/Hendricks, R. C. 46-Mech Engr  
 Nelson, C. C.  
 Morrison, G.

**NAG 3-242** **Texas A&M University** **4626**  
 Propeller/rotor icing study  
*Period* *Obligations*  
 12/15/81-03/15/85 FY85: TOTAL: \$112,892  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Korkan, K. D. LERC/Shaw, R. J. 41-Aero Engr

**NAG 3-272** **Texas A&M University** **4627**  
 Study of air foils for propeller applications  
*Period* *Obligations*  
 04/15/82-12/31/85 FY85: TOTAL: \$88,194  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Korkan, K. D. LERC/Hughes, C. E. 41-Aero Engr  
 LERC/Mikkelsen, D. C.

**NAG 3-314** **Texas A&M University** **4628**  
 Measurement of the elastic constants of B2 cobalt, nickel and iron aluminides as a function of temperature and composition  
*Period* *Obligations*  
 09/01/82-12/18/85 FY85: \$40,000 TOTAL: \$127,539  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Wolfenden, A. LERC/Whittenberger, J. D. 47-Materials Engr

**NAG 3-354** **Texas A&M University** **4629**  
 Study of propeller aerocoustic methodologies  
*Period* *Obligations*  
 11/15/82-11/12/85 FY85: \$53,599 TOTAL: \$159,526  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Korkan, K. D. LERC/Dittmar, J. H. 41-Aero Engr  
 LERC/Groeneweg, J. F.

**NAG 3-491** **Texas A&M University** **4630**  
 Intergrated research in constitutive modelling of metals at elevated temperature  
*Period* *Obligations*  
 11/15/83-12/31/85 FY85: \$23,973 TOTAL: \$104,192  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Haisler, W. E. LERC/Thompson, R. 41-Aero Engr  
 Bradley, W. L.  
 Allen, D. H.

# **NASA'S UNIVERSITY PROGRAM** **TEXAS (Continued)**

**NAG 3-626** **Texas A&M University** **4631**  
 Experimental study of performance degradation of a rotating system in the NASA Lewis icing tunnel  
*Period* *Obligations*  
 04/25/85-04/24/86 FY85: \$150,000 TOTAL: \$150,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Korkan, K. D. LERC/Blaha, B. J. 41-Aero Engr

**NAG 5-31** **Texas A&M University** **4632**  
 Investigation of remote sensing techniques for measuring soil moisture  
*Period* *Obligations*  
 03/01/80-08/31/84 FY85: TOTAL: \$984,200  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Newton, R. W. GSFC/Schmugge, T. J. 32-Geological Sci  
 Vanbavel, C. H. GSFC/Blanchard, B. J.  
 Blanchard, A. J.

**NAG 5-94** **Texas A&M University** **4633**  
 Research of altimetry data over trenches and island arcs and convection  
*Period* *Obligations*  
 09/01/80-06/30/86 FY85: \$24,318 TOTAL: \$123,659  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Caputo, M. GSFC/Welker, J. E. 32-Geological Sci  
 GSFC/Taylor, P. T.

**NAG 5-428** **Texas A&M University** **4634**  
 Backscatter cross-section characteristic of resonant structures  
*Period* *Obligations*  
 07/15/84-12/31/85 FY85: TOTAL: \$42,175  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Blanchard, A. J. GSFC/O'Neill, P. E. 19-Phys Sci, NEC  
 GSFC/Blanchard, B. J.

**NAG 9-115** **Texas A&M University** **4635**  
 Microwave model predictions and verifications for vegetated terrain  
*Period* *Obligations*  
 07/01/85-06/30/86 FY85: \$50,000 TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Fung, A. JSC/Pitts, D. 55-Agriculture Sci

**NAG 9-121** **Texas A&M University** **4636**  
 Evaluation of soil surface temperature as affected by soil hydrologic properties  
*Period* *Obligations*  
 07/01/85-07/01/86 FY85: \$50,000 TOTAL: \$50,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Heilman, J. L. JSC/Pitts, D. E. 55-Agriculture Sci

**NAGW 603** **Texas A&M University** **4637**  
 Planetary nontydrstatic figures  
*Period* *Obligations*  
 04/01/84-03/31/86 FY85: \$26,515 TOTAL: \$52,145  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Willemann, R. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAGW 651** **Texas A&M University** **4638**  
 Planetary permafrost  
*Period* *Obligations*  
 09/15/84-12/14/85 FY85: TOTAL: \$30,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Anderson, D. M. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAS 2-10272** **Texas A&M University** **4639**  
 Modification of a Swearingen metro wind tunnel model  
*Period* *Obligations*  
 06/19/79-02/28/85 FY85: TOTAL: \$354,766  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Brusse, J. C. ARC/Gambucci, B. J. 41-Aero Engr  
 ARC/Williams, L. J.

**NAS 3-24227** **Texas A&M University** **4640**  
 Measurement of heat transfer and pressure drops channels with turbulence promotors  
*Period* *Obligations*  
 02/14/84-04/15/86 FY85: TOTAL: \$59,987  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Han, J. C. LERC/Boyle, R. J. 41-Aero Engr

**NAS 5-22966** **Texas A&M University** **4641**  
 Nimbus-G experiment team for coastal zone color scanner  
*Period* *Obligations*  
 02/10/76-01/31/84 FY85: TOTAL: \$460,088  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 El-sayed, S. Z. GSFC/Szajna, E. F. 33-Oceanography  
 Trees, C.

**NAS 8-33716** **Texas A&M University** **4642**  
 Space Shuttle main engine fuel turbopump interstage seal test program  
*Period* *Obligations*  
 02/29/80-06/30/84 FY85: TOTAL: \$537,676  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 McDermott, M. MSFC/Garcia, F. F. 46-Mech Engr  
 MSFC/Gross, L. A.

**NAS 8-34505** **Texas A&M University** **4643**  
 Definition of forces on turbomachining rotors  
*Period* *Obligations*  
 10/27/81-11/30/84 FY85: TOTAL: \$126,376  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Childs, D. W. MSFC/Fox, T. W. 46-Mech Engr  
 MSFC/Garcia, F. F.

**NAS 8-34532** **Texas A&M University** **4644**  
 Mesoscale observational sounding program  
*Period* *Obligations*  
 07/20/81-08/31/83 FY85: TOTAL: \$101,997  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Scoggins, J. R. MSFC/Turner, R. E. 31-Atmos Sci  
 MSFC/Hill, K.

**NASA'S UNIVERSITY PROGRAM**  
**TEXAS (Continued)**

**NAS 8-34735 Texas A&M University 4645**  
 Visible infrared spin-scan radiometer atmospheric sounder sounding data evaluation  
*Period* *Obligations*  
 07/19/82-09/30/84 FY85: TOTAL: \$81,898  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Scoggins, J. R. MSFC/Arnold, J. E. 31-Atmos Sci  
 MSFC/Smith, G. T.

**NAS 8-34972 Texas A&M University 4646**  
 Vas sounding data study  
*Period* *Obligations*  
 08/26/82-01/25/85 FY85: TOTAL: \$49,993  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Huebner, G. L. MSFC/Arnold, J. E. 31-Atmos Sci  
 MSFC/Turner, R. E.

**NAS 8-35182 Texas A&M University 4647**  
 Application of satellite data to tropic/subtropic moisture coupling  
*Period* *Obligations*  
 04/06/83-04/05/86 FY85: \$100,991 TOTAL: \$278,191  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Thompson, A. H. MSFC/Kaufman, J. W. 31-Atmos Sci  
 McGuirk, J. P. MSFC/Smith, G. T.

**NAS 8-35824 Texas A&M University 4648**  
 Space Shuttle main engine fuel turbopump interstage seal test program  
*Period* *Obligations*  
 06/27/84-02/13/86 FY85: \$77,290 TOTAL: \$177,290  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Childs, D. MSFC/Garcia, F. F. 46-Mech Engr  
 MSFC/Aderhold, H.

**NAS 8-35972 Texas A&M University 4649**  
 Investigation of sequencing rules for the experiment scheduling program  
*Period* *Obligations*  
 04/13/84-01/15/86 FY85: TOTAL: \$99,711  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Shannon, R. E. MSFC/Weiler, J. D. 29-Math/Computer, NEC  
 Deuremeyer, B. L. MSFC/Jaap, J. P.

**NAS 8-36161 Texas A&M University 4650**  
 Labyrinth seals for incompressible fluids  
*Period* *Obligations*  
 09/27/84-09/26/85 FY85: TOTAL: \$114,704  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Rhode, P. L. MSFC/Garcia, F. F. 46-Mech Engr  
 Morrison, G. L. MSFC/Aderhold, H.

**NAS 8-36182 Texas A&M University 4651**  
 Hybrid methods for rotodynamic analysis  
*Period* *Obligations*  
 03/11/85-03/10/86 FY85: \$60,523 TOTAL: \$60,523  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Noah, S. T. MSFC/Fox, T. H. 43-Chem Engr  
 Childs, D. W. MSFC/Schutenhofer, L.

**NAS 9-14828 Texas A&M University 4652**  
 Lunar sample irradiation services  
*Period* *Obligations*  
 11/01/75-02/28/85 FY85: TOTAL: \$86,289  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Randall, J. D. JSC/Blanchard, D. 39-Env Sci, NEC

**NAS 9-16443 Texas A&M University 4653**  
 Jet exhaust, ice suppression system validation study  
*Period* *Obligations*  
 08/05/81-09/03/85 FY85: TOTAL: \$201,573  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Porteiro, J. R. JSC/Stroughal, G. 49-Engr, NEC  
 Norton, D. J.

**NAS 9-16664 Texas A&M University 4654**  
 Mathematical pattern recognition and image analysis program  
*Period* *Obligations*  
 07/16/82-07/15/86 FY85: \$10,000 TOTAL: \$2,206,557  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Guseman, L. F., Jr. JSC/Browne, I. D. 39-Env Sci, NEC

**NAS 9-16785 Texas A&M University 4655**  
 Area estimation using multiyear designs and partial identification  
*Period* *Obligations*  
 11/01/82-03/31/84 FY85: TOTAL: \$39,722  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Sielken, R. L., Jr. JSC/Actkinson, A. L. 39-Env Sci, NEC

**NAS 9-17141 Texas A&M University 4656**  
 Lunar nuclear power feasibility  
*Period* *Obligations*  
 04/01/84-11/30/84 FY85: TOTAL: \$9,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Erdman, C. A. JSC/Van Tassel, K. E. 32-Geological Sci

**NAS 9-17164 Texas A&M University 4657**  
 Study of shuttle landing characteristics: Propose improvements in shuttle aerodynamic configuration and other features to reduce the hazards of shuttle landings  
*Period* *Obligations*  
 07/05/84-10/31/85 FY85: TOTAL: \$31,736  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Chevalier, H. L. JSC/Cooke, D. R. 41-Aero Engr  
 Ward, D. T.

**NAS 9-17320 Texas A&M University 4658**  
 Computer vision and robotics research in space  
*Period* *Obligations*  
 03/01/85-03/31/86 FY85: \$87,000 TOTAL: \$87,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Griswold, N. JSC/Juday, R. 59-Life Sci, NEC

**NAS 9-17321 Texas A&M University 4659**  
 Reliability study of space station electrical power systems (EPS)  
*Period* *Obligations*  
 03/01/85-09/30/85 FY85: \$46,000 TOTAL: \$46,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
 Patton, A. D. JSC/Fraser, B. 59-Life Sci, NEC



# **NASA'S UNIVERSITY PROGRAM** **TEXAS (Continued)**

**NAS 9-17322 Texas A&M University 4660**  
Single crystal growth and characterization of ilmenite, FE0, T102 for practical applications

Period	Obligations	
02/01/85-01/31/86	FY85: \$57,000	TOTAL: \$57,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Pandey, R. K.	JSC/Duke, M.	59-Life Sci, NEC

**NAS 9-17323 Texas A&M University 4661**  
Conceptual design of power management and distribution systems

Period	Obligations	
03/01/85-11/30/85	FY85: \$54,000	TOTAL: \$54,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Patton, A. D.	JSC/Hackler, I.	59-Life Sci, NEC

**NAS 9-17324 Texas A&M University 4662**  
Microgravity two-phase flow design analysis

Period	Obligations	
04/01/85-03/31/86	FY85: \$78,000	TOTAL: \$78,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Best, F.	JSC/Faget, N.	59-Life Sci, NEC

**NASW 3557 Texas A&M University 4663**  
Research for and preparation of a manuscript for a NASA special publication NASA mechanical explorers

Period	Obligations	
12/01/81-12/31/84	FY85:	TOTAL: \$95,025
Prin. Invest.	NASA Tech. Officer	CASE Category
Nicks, O. W.	HQ-NI/Vogelwede, K. E.	73-History
	HQ-NI/Wente, V. A.	

**NCA 2-773301 Texas A&M University 4664**  
Investigation of helicopter rotor blade/wake interaction impulsive noise

Period	Obligations	
06/01/83-01/31/85	FY85:	TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Miley, S.	ARC/Watts, M. E.	41-Aero Engr
Hall, G. F.	ARC/Shockey, G. A.	
Von Lavante, E.		

**NCC 2-260 Texas A&M University 4665**  
Development of analytical procedures for helicopter rotor tip aerodynamics

Period	Obligations	
09/01/83-02/28/86	FY85:	TOTAL: \$51,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Hall, G. F.	ARC/Shockey, G. A.	41-Aero Engr

**NCC 2-368 Texas A&M University 4666**  
Wind tunnel investigation of canard configurations

Period	Obligations	
08/01/85-05/31/86	FY85: \$20,000	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Chevalier, H. L.	ARC/Feistel, T. W.	41-Aero Engr

**NGT 44-001-800 Texas A&M University 4667**  
Summer faculty fellowship program in engineering systems design

Period	Obligations	
01/01/80-03/31/86	FY85: \$262,895	TOTAL: \$909,875
Prin. Invest.	NASA Tech. Officer	CASE Category
Chilton, R. G.	HQ-LB/Owens, F. C.	49-Engr, NEC

**NGT 44-001-801 Texas A&M University 4668**  
Shearing of atmospherically driven nearshore dynamics

Period	Obligations	
09/01/80-07/31/84	FY85:	TOTAL: \$34,205
Prin. Invest.	NASA Tech. Officer	CASE Category
McGrail, D. W.	HQ-LB/Owens, F. C.	32-Geological Sci

**NGT 44-001-802 Texas A&M University 4669**  
NASA graduate student researchers program

Period	Obligations	
06/01/83-05/31/85	FY85:	TOTAL: \$22,400
Prin. Invest.	NASA Tech. Officer	CASE Category
Heilman, J. L.	HQ-LB/Owens, F. C.	51-Biological Sci

**NGT 44-001-803 Texas A&M University 4670**  
NASA graduate student researchers program

Period	Obligations	
06/01/84-05/31/86	FY85: \$18,000	TOTAL: \$33,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ostowari, C.	HQ-LB/Owens, F. C.	46-Mech Engr

**NGT 44-001-804 Texas A&M University 4671**  
NASA graduate student researchers program

Period	Obligations	
07/01/85-06/30/86	FY85: \$18,000	TOTAL: \$18,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Kinra, V. K.	HQ-LE/Owens, F. C.	41-Aero Engr

**NSG 1174 Texas A&M University 4672**  
Development of inverse transonic airfoil design methods including boundary layer and viscous interaction effects

Period	Obligations	
05/01/75-01/31/85	FY85:	TOTAL: \$179,641
Prin. Invest.	NASA Tech. Officer	CASE Category
Carlson, L. A.	LARC/Everhart, J. L.	41-Aero Engr
	LARC/South, J. C.	

**NAG 1-28 Texas Tech University 4673**  
Lightning sensors and data interpretation

Period	Obligations	
01/15/80-07/14/86	FY85:	TOTAL: \$370,309
Prin. Invest.	NASA Tech. Officer	CASE Category
Trost, T. F.	LARC/Pitts, F. L.	45-Elec Engr
Craig, J. P.	LARC/Zaepfel, K. P.	

**NAG 2-189 Texas Tech University 4674**  
Nonlinear systems

Period	Obligations	
10/01/82-08/31/85	FY85:	TOTAL: \$65,818
Prin. Invest.	NASA Tech. Officer	CASE Category
Hunt, L. R.	ARC/Meyer, G.	49-Engr, NEC

**NASA'S UNIVERSITY PROGRAM  
TEXAS (Continued)**

**NAG 2-203 Texas Tech University 4675**  
System theory and algorithms of totally automatic flight control systems

Period	Obligations	
10/01/82-10/31/85	FY85: \$39,997	TOTAL: \$104,511
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Su, R.	ARC/Meyer, G.	49-Engr, NEC
Martin, C.		

**NAG 5-514 Texas Tech University 4676**  
Determining the spatial extent of African new eastern and central Asian desert

Period	Obligations	
06/15/85-06/14/86	FY85: \$25,000	TOTAL: \$25,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dregne, H. E.	GSFC/Holben, B.	59-Life Sci, NEC

**NGT 44-011-801 Texas Tech University 4677**  
NASA graduate student researchers program

Period	Obligations	
06/01/84-05/31/86	FY85: \$17,850	TOTAL: \$32,850
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Su, R.	HQ-LB/Owens, F. C.	13-Physics

**NAS 9-17457 Texas Woman's University 4678**  
Software development for automatic contouring of reach data

Period	Obligations	
09/01/85-09/01/86	FY85: \$50,000	TOTAL: \$50,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zimmerman, W.	JSC/Woolford, B.	59-Life Sci, NEC

**NAG 1-370 University of Houston - Houston 4679**  
Development of identification algorithms for large space systems

Period	Obligations	
06/01/83-12/31/84	FY85:	TOTAL: \$47,880
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Denman, E. D.	LARC/Juang, J. N.	49-Engr, NEC

**NAG 1-388 University of Houston - Houston 4680**  
Nondestructive evaluation of residual stress in low-carbon steels

Period	Obligations	
09/01/83-08/31/84	FY85:	TOTAL: \$32,817
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Salama, K.	LARC/Heyman, J. S.	46-Mech Engr
	LARC/Cantrell, J. H., Jr.	

**NAG 1-495 University of Houston - Houston 4681**  
Experimental study to determine optimum sound absorption characteristics of duct wall attenuators

Period	Obligations	
07/01/84-12/31/84	FY85:	TOTAL: \$7,222
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Koopmann, G. H.	LARC/Maestrello, L.	41-Aero Engr
	LARC/Stainback, P. C.	

**NAG 2-279 University of Houston - Houston 4682**  
Dynamics and symmetry

Period	Obligations	
03/01/84-02/28/86	FY85: \$36,000	TOTAL: \$65,012
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Golubitsky, M.	ARC/Tobak, M.	29-Math/Computer, NEC
Stewart, I.	ARC/Chapman, G. T.	

**NAG 3-408 University of Houston - Houston 4683**  
Interaction of free turbulent shear flows and sound

Period	Obligations	
03/25/83-03/24/86	FY85:	TOTAL: \$95,608
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hussain, A. K.	LERC/Stone, J. R.	41-Aero Engr

**NAG 3-510 University of Houston - Houston 4684**  
2 phase flow at zero gravity

Period	Obligations	
01/02/84-11/30/85	FY85: \$76,243	TOTAL: \$119,541
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dukler, A. E.	LERC/Miller, C. D.	43-Chem Engr

**NAG 3-537 University of Houston - Houston 4685**  
Flow boiling burnout in reduced gravity environments

Period	Obligations	
05/16/84-12/31/85	FY85: \$38,739	TOTAL: \$78,722
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lienhard, J. H.	LERC/Vernon, R. W.	46-Mech Engr

**NAG 3-639 University of Houston - Houston 4686**  
Basic investigations of incompressible elliptic jets

Period	Obligations	
06/15/85-06/14/86	FY85: \$53,375	TOTAL: \$53,375
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hussain, A. K.	LERC/Rice, E. J.	41-Aero Engr
	LERC/McKinzie, D. J.	

**NAG 5-585 University of Houston - Houston 4687**  
Wilson cycle studies

Period	Obligations	
07/15/85-07/14/86	FY85: \$29,153	TOTAL: \$29,153
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Burke, K.	GSFC/Welker, J. E.	32-Geological Sci

**NAG 5-624 University of Houston - Houston 4688**  
Search-coil magnetometer experiment on project TOR

Period	Obligations	
03/01/84-02/28/86	FY85:	TOTAL: \$1,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Benbrook, J. R.	GSFC/Early, L. J.	13-Physics
	GSFC/Pless, R. H.	

**NAG 6-18 University of Houston - Houston 4689**  
Program to observe X-ray auroral quenching in Waterhole II

Period	Obligations	
04/01/81-06/30/85	FY85:	TOTAL: \$105,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sheldon, W. R.	GSFC/Early, L. J.	13-Physics
Benbrook, J. R.	GSFC/Pless, R. H.	
Bering, E. A.		

**NASA'S UNIVERSITY PROGRAM  
TEXAS (Continued)**

**NAGW 169 University of Houston - Houston 4690**  
Galilean satellite geologic mapping

Period	Obligations
04/01/81-03/30/85	FY85: TOTAL: \$42,100
Prin. Invest.	NASA Tech. Officer CASE Category
King, E. A.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

**NAGW 178 University of Houston - Houston 4691**  
High temperature volatilization experiment with materials approximating solar composition

Period	Obligations
04/01/81-06/30/84	FY85: TOTAL: \$76,060
Prin. Invest.	NASA Tech. Officer CASE Category
King, E. A.	HQ-EL/Quaide, W. L. 32-Geological Sci
	HQ-EL/French, B. M.

**NAGW 439 University of Houston - Houston 4692**  
Crater formation and obliteration on the Jovian satellites

Period	Obligations
03/01/83-02/28/86	FY85: \$20,985 TOTAL: \$77,378
Prin. Invest.	NASA Tech. Officer CASE Category
Woronow, A.	HQ-EL/Boyce, J. M. 32-Geological Sci
	HQ-EL/Holt, H. E.

**NAS 2-11165 University of Houston - Houston 4693**  
The influence of weightlessness on lignification in developing plant seedlings

Period	Obligations
01/01/82-10/31/85	FY85: \$129,981 TOTAL: \$401,941
Prin. Invest.	NASA Tech. Officer CASE Category
Cowles, J. R.	ARC/Merek, E. 59-Life Sci, NEC

**NAS 5-28139 University of Houston - Houston 4694**  
Neotectonics of the Northern caribbean plate bound boundary zone a synthesis of vlb and laser ranger data with neotectonic field studies in Jamaica and the Dominican Republic

Period	Obligations
06/05/84-06/05/86	FY85: TOTAL: \$20,424
Prin. Invest.	NASA Tech. Officer CASE Category
Burke, K.	GSFC/Mead, G. D. 31-Atmos Sci

**NAS 8-35161 University of Houston - Houston 4695**  
Effects of undercooling and modified microstructure on the physical properties of materials synthesized in the drop-tube and drop-tower

Period	Obligations
12/17/82-09/01/85	FY85: TOTAL: \$165,366
Prin. Invest.	NASA Tech. Officer CASE Category
Chu, C. W.	MSFC/Fogle, V. 47-Materials Engr

**NAS 9-11676 University of Houston - Houston 4696**  
Characterization of heat transfer in nutrient materials

Period	Obligations
04/28/71-01/01/85	FY85: TOTAL: \$109,948
Prin. Invest.	NASA Tech. Officer CASE Category
Witte, L. C.	JSC/Sauer, R. L. 59-Life Sci, NEC

**NAS 9-16593 University of Houston - Houston 4697**  
Food service habitat for the space operation center

Period	Obligations
03/21/82-10/01/85	FY85: \$7,000 TOTAL: \$115,000
Prin. Invest.	NASA Tech. Officer CASE Category
Bell, L.	JSC/Mason, J. 99-Multi-Discip

**NAS 9-16980 University of Houston - Houston 4698**  
Riboflavin absorpion study

Period	Obligations
08/01/83-04/01/86	FY85: TOTAL: \$10,056
Prin. Invest.	NASA Tech. Officer CASE Category
Feldman, S.	JSC/Degioanni, J. 56-Medical Sciences

**NAS 9-17315 University of Houston - Houston 4699**  
Provide analysis and recommendations to the national space transportation systems program for use in management of its transition from R and D to operations

Period	Obligations
01/15/85-01/15/86	FY85: \$99,000 TOTAL: \$99,000
Prin. Invest.	NASA Tech. Officer CASE Category
Hunsucker, J. L.	JSC/Heselmeyer, R. 99-Multi-Discip

**NAS 9-17380 University of Houston - Houston 4700**  
Numerical flow simulator for electrophoresis separation processes

Period	Obligations
05/01/85-10/31/86	FY85: \$49,100 TOTAL: \$49,100
Prin. Invest.	NASA Tech. Officer CASE Category
Tezduyar, T. E.	JSC/Goodrich, W. 99-Multi-Discip
	JSC/Goodrich, W.

**NAS 9-17442 University of Houston - Houston 4701**  
Pressure decay boiling experiment

Period	Obligations
07/01/85-10/31/86	FY85: \$48,700 TOTAL: \$48,700
Prin. Invest.	NASA Tech. Officer CASE Category
Lienhard, J. H.	JSC/Kroll, K. 43-Chem Engr

**NAS 9-17512 University of Houston - Houston 4702**  
Research atmospheric contaminants

Period	Obligations
07/01/85-07/01/86	FY85: \$42,920 TOTAL: \$42,920
Prin. Invest.	NASA Tech. Officer CASE Category
Worley, F.	JSC/Coleman, M. 31-Atmos Sci

**NCC 1-88 University of Houston - Houston 4703**  
Nondestructive ultrasonic characterization of engineering materials

Period	Obligations
10/01/84-09/30/85	FY85: TOTAL: \$55,779
Prin. Invest.	NASA Tech. Officer CASE Category
Salama, K.	LARC/Cantrell, J. H., Jr. 47-Materials Engr
	LARC/Yost, W. T.

**NASA'S UNIVERSITY PROGRAM  
TEXAS (Continued)**

**NCC 9-12 University of Houston - Houston 4704**  
Role of blood flow in bone demineralization  
*Period Obligations*  
05/01/84-09/01/85 FY85: TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Nerem, R. M. JSC/Huntoon, C. L. 56-Medical Sciences

**NGR 44-005-002 University of Houston - Houston 4705**  
Studies in organic cosmochemistry, including consideration of compound formation under primitive Earth conditions and of organic material in selected meteorites  
*Period Obligations*  
06/18/62-12/31/85 FY85: \$114,795 TOTAL: \$1,612,179  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Oro, J. HQ-EB/Devincenzi, D. L.  
HQ-EB/Rambler, M. B. 32-Geological Sci

**NGT 44-005-801 University of Houston - Houston 4706**  
NASA graduate student researchers program  
*Period Obligations*  
06/01/81-11/30/84 FY85: TOTAL: \$37,767  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Heilman, J. L. HQ-LB/Owens, F. C. 51-Biological Sci

**NGT 44-005-802 University of Houston - Houston 4707**  
NASA graduate student researchers program  
*Period Obligations*  
05/01/83-04/30/85 FY85: TOTAL: \$26,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Bell, L. HQ-LB/Owens, F. C. 59-Life Sci, NEC

**NGT 44-005-803 University of Houston - Houston 4708**  
1984 summer faculty program  
*Period Obligations*  
01/01/84-12/31/85 FY85: TOTAL: \$294,978  
*Prin. Invest. NASA Tech. Officer CASE Category*  
McInnis, B. C. HQ-LB/Owens, F. C. 49-Engr, NEC

**NGT 44-005-804 University of Houston - Houston 4709**  
NASA graduate student researchers program  
*Period Obligations*  
03/15/84-03/14/86 FY85: \$18,000 TOTAL: \$33,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Middleditch, B. S. HQ-LB/Owens, F. C. 12-Chemistry

**NGT 44-005-805 University of Houston - Houston 4710**  
NASA graduate student researchers program  
*Period Obligations*  
06/01/84-05/31/86 FY85: \$17,000 TOTAL: \$32,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Nerem, R. M. HQ-LB/Owens, F. C. 51-Biological Sci

**NGT 44-005-806 University of Houston - Houston 4711**  
NASA graduate student researchers program  
*Period Obligations*  
04/01/84-08/31/86 FY85: TOTAL: \$12,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hussain, A. K. HQ-LB/Owens, F. C. 46-Mech Engr

**NGT 44-005-807 University of Houston - Houston 4712**  
NASA graduate student researchers program  
*Period Obligations*  
07/01/85-06/30/86 FY85: \$13,700 TOTAL: \$13,700  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Melosi, M. HQ-LE/Owens, F. C. 73-History

**NGT 44-005-808 University of Houston - Houston 4713**  
NASA graduate student researchers program  
*Period Obligations*  
07/01/85-06/30/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hussain, A. F. HQ-LE/Owens, F. C. 46-Mech Engr

**NGT 44-005-809 University of Houston - Houston 4714**  
NASA graduate student researchers program  
*Period Obligations*  
07/01/85-06/30/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hussain, A. K. HQ-LE/Owens, F. C. 46-Mech Engr

**NSG 7440 University of Houston - Houston 4715**  
Evolutionary relationships in the microbial world  
*Period Obligations*  
06/01/78-11/30/85 FY85: \$67,998 TOTAL: \$413,498  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Fox, G. E. HQ-EB/Devincenzi, D. L.  
HQ-EB/Rambler, M. 51-Biological Sci

**NSG 7551 University of Houston - Houston 4716**  
Mars: Significance of large open spaces within the north polar dune fields  
*Period Obligations*  
04/01/79-03/31/85 FY85: TOTAL: \$36,903  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Smith, R. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Quaide, W. L.

**NSG 9042 University of Houston - Houston 4717**  
Aromatic biosynthesis in pine tissues  
*Period Obligations*  
04/01/76-05/31/86 FY85: TOTAL: \$209,800  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cowles, J. R. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAS 9-17010 University of Houston - Clear Lake 4718**  
ADA software language/architecture study  
*Period Obligations*  
10/01/83-07/31/86 FY85: \$386,000 TOTAL: \$636,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
McKay, C. W. JSC/Garman, J. R. 99-Multi-Discip

**NAS 9-17117 University of Houston - Clear Lake 4719**  
Advanced multisensor/multistage sampling and estimation in support of biomass monitoring of major vegetation types  
*Period Obligations*  
02/29/84-02/28/85 FY85: TOTAL: \$41,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hallum, C. R. JSC/Browne, I. D. 39-Env Sci, NEC

# **NASA'S UNIVERSITY PROGRAM** **TEXAS (Continued)**

**NAS 9-17177 University of Houston - Clear Lake 4720**  
 R and D management center

Period	Obligations
06/15/84-08/31/85	FY85: TOTAL: \$51,000
Prin. Invest.	NASA Tech. Officer CASE Category
Bruno, S. J.	JSC/Young, E. B. 49-Engr, NEC

**NAS 9-17369 University of Houston - Clear Lake 4721**  
 History of the NASA space station

Period	Obligations
01/01/85-12/31/87	FY85: \$187,500 TOTAL: \$187,500
Prin. Invest.	NASA Tech. Officer CASE Category
Bilstein, R.	JSC/Waldrup, W. 73-History

**NAS 9-17407 University of Houston - Clear Lake 4722**  
 Collision avoidance radar (CAR) system

Period	Obligations
05/01/85-11/30/85	FY85: \$49,500 TOTAL: \$49,500
Prin. Invest.	NASA Tech. Officer CASE Category
Dickerson, E. T.	JSC/O'Connell, D. 45-Elec Engr
Hallum, C.	

**NSG 9043 University of Houston - Clear Lake 4723**  
 Cosmic ray and solar flare irradiation history of regolith crystals and agglutinates

Period	Obligations
06/01/76-01/01/86	FY85: \$14,997 TOTAL: \$174,597
Prin. Invest.	NASA Tech. Officer CASE Category
Blanford, G. E.	JSC/Browne, I. D. 13-Physics
Meyer, C.	

**NAG 2-273 University of Texas - Arlington 4724**  
 Reliability models for data flow and demand driven computer systems

Period	Obligations
02/01/84-03/31/85	FY85: TOTAL: \$32,685
Prin. Invest.	NASA Tech. Officer CASE Category
Kavi, K. M.	ARC/Stevens, K. G., Jr. 22-Computer Science
Buckles, B. P.	ARC/Schulbach, C. H.

**NAG 5-486 University of Texas - Arlington 4725**  
 Scattering models and basic experiments in the microwave regime

Period	Obligations
10/15/84-04/14/86	FY85: \$89,998 TOTAL: \$89,998
Prin. Invest.	NASA Tech. Officer CASE Category
Fung, A. K.	GSFC/Choudhury, B. 55-Agriculture Sci
Blanchard	

**NCA 2-12 University of Texas - Arlington 4726**  
 An agreement implementing the intergovernmental personnel act of 1970

Period	Obligations
01/31/85-01/15/86	FY85: \$46,252 TOTAL: \$46,252
Prin. Invest.	NASA Tech. Officer CASE Category
Starks, S. A.	ARC/Lum, H. 29-Math/Computer, NEC

**NCA 2-780401 University of Texas - Arlington 4727**  
 Development of an expert system for the analysis of aerosol particle samples

Period	Obligations
10/01/83-06/10/84	FY85: TOTAL: \$18,306
Prin. Invest.	NASA Tech. Officer CASE Category
Starks, S. A.	ARC/Lum, H. 22-Computer Science

**NAG 1-384 University of Texas - Austin 4728**  
 Determination of fuel optimal flight paths for atmospheric vehicles

Period	Obligations
08/01/83-12/31/84	FY85: TOTAL: \$51,703
Prin. Invest.	NASA Tech. Officer CASE Category
Speyer, J. L.	LARC/Gracey, C. 41-Aero Engr
Hull, D. G.	LARC/Knox, C. E.

**NAG 1-556 University of Texas - Austin 4729**  
 A new singular integral method for compressible flow

Period	Obligations
02/01/85-01/31/86	FY85: \$22,444 TOTAL: \$22,444
Prin. Invest.	NASA Tech. Officer CASE Category
Wilson, D. E.	LARC/Allison, D. O. 41-Aero Engr
	LARC/Barnwell, R. W.

**NAG 1-610 University of Texas - Austin 4730**  
 The effect of a row of Helmholtz resonators on the turbulence in a boundary layer

Period	Obligations
09/01/85-08/31/86	FY85: \$58,802 TOTAL: \$58,802
Prin. Invest.	NASA Tech. Officer CASE Category
Panton, R. L.	LARC/Anders, J. B. 41-Aero Engr
	LARC/Bushnell, D. M.

**NAG 2-67 University of Texas - Austin 4731**  
 Density and temperature structure of clouds around low luminosity young stars

Period	Obligations
09/01/80-10/14/85	FY85: \$201,966 TOTAL: \$789,803
Prin. Invest.	NASA Tech. Officer CASE Category
Harvey, P. M.	ARC/Haughney, L. C. 11-Astronomy

**NAG 2-137 University of Texas - Austin 4732**  
 Determinants of individual and group performance

Period	Obligations
12/01/81-05/31/85	FY85: TOTAL: \$272,465
Prin. Invest.	NASA Tech. Officer CASE Category
Helmreich, R. L.	ARC/Patton, R. M. 62-Social Aspects

**NAG 2-199 University of Texas - Austin 4733**  
 Far-infrared photometry of molecular clouds in the outer galaxy from the Kuiper Airborne Observatory

Period	Obligations
10/01/82-09/30/84	FY85: TOTAL: \$9,528
Prin. Invest.	NASA Tech. Officer CASE Category
Evans, N. J., II	ARC/Haughney, L. C. 11-Astronomy
Kutner, M. L.	

**NASA'S UNIVERSITY PROGRAM**  
**TEXAS (Continued)**

**NAG 2-253**                      **University of Texas - Austin**                      **4734**  
 Far-infrared photometry of low-mass pre-main -sequence stars  
 with broad CO wings

<i>Period</i>	<i>Obligations</i>	
10/01/83-09/30/85	FY85: TOTAL: \$18,843	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Evans, N. J., Jr.	ARC/Haughney, L. C.	11-Astronomy

**NAG 5-528**                      **University of Texas - Austin**                      **4741**  
 Simulation and analysis of a geopotential mission

<i>Period</i>	<i>Obligations</i>	
04/15/85-04/14/86	FY85: \$60,000 TOTAL: \$60,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schutz, B.	GSFC/Welker, J. E.	32-Geological Sci
Tapley, B. D.		

**NAG 2-372**                      **University of Texas - Austin**                      **4735**  
 Far-infrared emission line spectroscopy for the Kuiper Airborne  
 Observatory

<i>Period</i>	<i>Obligations</i>	
10/01/85-09/30/86	FY85: \$22,000 TOTAL: \$22,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dinerstein, H. L.	ARC/Haughney, L. C.	11-Astronomy

**NAG 5-543**                      **University of Texas - Austin**                      **4742**  
 An investigation of a peculiar high luminosity quasar, contenum  
 variability of interonediare redshift quasar

<i>Period</i>	<i>Obligations</i>	
06/01/85-05/31/86	FY85: \$20,431 TOTAL: \$20,431	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wills, B. J.	GSFC/Kondo, Y.	11-Astronomy
Wills, D.		
Netzer, H.		

**NAG 3-210**                      **University of Texas - Austin**                      **4736**  
 Statistical appraoches to linear dynamic analysis of aero-  
 structures

<i>Period</i>	<i>Obligations</i>	
12/18/81-06/15/85	FY85: TOTAL: \$67,024	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Spanos, P. D.	LERC/Chamis, C. C.	41-Aero Engr
	LERC/Hopkins, D. A.	

**NAG 5-569**                      **University of Texas - Austin**                      **4743**  
 Ultraviolet observations of dwarf irregular galaxies

<i>Period</i>	<i>Obligations</i>	
07/01/85-06/30/86	FY85: \$10,000 TOTAL: \$10,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shields, G.	GSFC/Kondo, Y.	11-Astronomy

**NAG 3-329**                      **University of Texas - Austin**                      **4737**  
 Analysis and development of finite elements methods for the  
 study of nonlinear thermomechanical behavior of structural  
 components

<i>Period</i>	<i>Obligations</i>	
09/20/82-03/18/85	FY85: TOTAL: \$133,445	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Oden, J. T.	LERC/Chamis, C. C.	41-Aero Engr
	LERC/Johns, R. H.	

**NAG 5-628**                      **University of Texas - Austin**                      **4744**  
 A sounding rocket experiment to image the far UV emissions of  
 Halley s comet

<i>Period</i>	<i>Obligations</i>	
10/01/84-09/30/85	FY85: \$10,777 TOTAL: \$10,777	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Opal, C. B.	GSFC/Early, L. J.	13-Physics
	GSFC/Pless, R. H.	

**NAG 3-393**                      **University of Texas - Austin**                      **4738**  
 Ground based investigations of surface tension driven convection  
 as a feasibility study for a zero gravity experiment

<i>Period</i>	<i>Obligations</i>	
02/15/83-12/30/85	FY85: \$46,932 TOTAL: \$86,932	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Koschmieder, E. L.	LERC/Chai, A. T.	13-Physics

**NAG 8-484**                      **University of Texas - Austin**                      **4745**  
 Astro-i measurements of production rates for atoms in comet  
 Halley

<i>Period</i>	<i>Obligations</i>	
07/01/84-09/30/85	FY85: TOTAL: \$35,698	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Opal, C. B.	MSFC/Owens, J. H.	11-Astronomy

**NAG 3-602**                      **University of Texas - Austin**                      **4739**  
 Synthesis of novel high temperature liquid and solid lubricants  
 by direct fluorination

<i>Period</i>	<i>Obligations</i>	
01/15/85-01/14/86	FY85: \$55,000 TOTAL: \$55,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lagow, R. J.	LERC/Jones, W. R.	12-Chemistry

**NAG 9-114**                      **University of Texas - Austin**                      **4746**  
 Hypervelocity penetration study of composite materials

<i>Period</i>	<i>Obligations</i>	
06/01/85-05/31/86	FY85: \$30,101 TOTAL: \$30,101	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yew, C. H.	JSC/Crews, J.	47-Materials Engr
Kyriakides, S.		

**NAG 5-437**                      **University of Texas - Austin**                      **4740**  
 Bergllium in peculiar giant stars

<i>Period</i>	<i>Obligations</i>	
07/01/84-09/30/85	FY85: \$9,996 TOTAL: \$19,591	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Snedden, C.	GSFC/Kondo, Y.	11-Astronomy
Lambert, D. L.		

**NAGW 233**                      **University of Texas - Austin**                      **4747**  
 Fiducial reference for the Hipparcos reference system

<i>Period</i>	<i>Obligations</i>	
09/01/81-01/31/87	FY85: TOTAL: \$28,718	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Duncombe, R. L.	HQ-EZ/Stencel, R. E.	11-Astronomy
	HQ-EZ/Bogges, N. W.	

**NASA'S UNIVERSITY PROGRAM**  
**TEXAS (Continued)**

**NAS 1-17802**      **University of Texas - Austin**      **4748**  
 Performance of technical support in propagation of noise from large wind turbine generators

Period	Obligations	
07/20/84-07/19/86	FY85: \$69,000	TOTAL: \$104,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Blackstock, D. T.	LARC/Preisser, J. S.	13-Physics
	LARC/Deloach, R.	

**NAS 8-32906**      **University of Texas - Austin**      **4755**  
 Scientific investigations in support of the space telescope project, to assure that the space telescope will perform astrometric functions

Period	Obligations	
02/01/78-06/30/86	FY85: \$716,033	TOTAL: \$2,753,033
Prin. Invest.	NASA Tech. Officer	CASE Category
Jefferys, W. H.	MSFC/Humphreys, J. T.	11-Astronomy

**NAS 5-25656**      **University of Texas - Austin**      **4749**  
 Space telescope/high resolution spectrograph

Period	Obligations	
05/09/79-04/02/86	FY85: \$2,000	TOTAL: \$48,784
Prin. Invest.	NASA Tech. Officer	CASE Category
Trafton, L. M.	GSFC/Vitagliano, H. D.	11-Astronomy

**NAS 8-35338**      **University of Texas - Austin**      **4756**  
 Multishaker modal testing

Period	Obligations	
08/10/83-11/17/86	FY85: \$84,753	TOTAL: \$134,539
Prin. Invest.	NASA Tech. Officer	CASE Category
Craig, R. R.	MSFC/Kiefling, L.	46-Mech Engr
	MSFC/Jordan, J. D.	

**NAS 5-25948**      **University of Texas - Austin**      **4750**  
 Operation and management of the lunar and satellite laser ranging ground station equipment at McDonald Observatory, Texas

Period	Obligations	
11/15/79-12/31/84	FY85:	TOTAL: \$4,135,628
Prin. Invest.	NASA Tech. Officer	CASE Category
Shelus, P. J.	GSFC/Hughes, W. E.	11-Astronomy

**NAS 9-13680**      **University of Texas - Austin**      **4757**  
 Assessment of real gas effects on the extrapolation of shuttle flow field phenomena to flight conditions

Period	Obligations	
09/27/73-11/30/85	FY85: \$50,000	TOTAL: \$383,985
Prin. Invest.	NASA Tech. Officer	CASE Category
Bertin, J. J.	JSC/Goodrich, W. D.	41-Aero Engr

**NAS 5-27235**      **University of Texas - Austin**      **4751**  
 Crustal dynamics and earthquake research

Period	Obligations	
05/27/82-09/27/84	FY85:	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Shelus, P. J.	GSFC/Mead, G.	32-Geological Sci

**NAS 9-16955**      **University of Texas - Austin**      **4758**  
 Apq-102A imaging radar digital image quality study

Period	Obligations	
10/01/83-11/30/84	FY85:	TOTAL: \$20,600
Prin. Invest.	NASA Tech. Officer	CASE Category
Griffin, C. R.	JSC/Lapoint, D. A.	45-Elec Engr

**NAS 5-27344**      **University of Texas - Austin**      **4752**  
 Satellite laser ranging group of the crustal dynamics project

Period	Obligations	
11/16/82-11/15/85	FY85:	TOTAL: \$168,195
Prin. Invest.	NASA Tech. Officer	CASE Category
Tapley, B. D.	GSFC/Kolenkiewicz, R.	32-Geological Sci

**NAS 9-17085**      **University of Texas - Austin**      **4759**  
 Hypervelocity penetration study of composite materials

Period	Obligations	
12/01/83-04/01/85	FY85:	TOTAL: \$44,650
Prin. Invest.	NASA Tech. Officer	CASE Category
Kyriakides, S.	JSC/Crews, J. L.	39-Env Sci, NEC

**NAS 5-28192**      **University of Texas - Austin**      **4753**  
 Solid Earth dynamics using lase as range observations

Period	Obligations	
07/08/84-01/08/86	FY85: \$90,000	TOTAL: \$219,181
Prin. Invest.	NASA Tech. Officer	CASE Category
Tapley, B. D.	GSFC/Mead, G. D.	31-Atmos Sci

**NAS 9-17228**      **University of Texas - Austin**      **4760**  
 Study to determine effects of a distributive radar system array antenna on image quality

Period	Obligations	
09/01/84-04/15/85	FY85: \$32,705	TOTAL: \$32,705
Prin. Invest.	NASA Tech. Officer	CASE Category
Griffin, C. R.	JSC/Davidson, S. E.	45-Elec Engr
Estes, J. M., Jr.		

**NAS 8-32905**      **University of Texas - Austin**      **4754**  
 Scientific investigation in support of the space telescope project

Period	Obligations	
02/15/78-06/30/86	FY85: \$26,767	TOTAL: \$312,167
Prin. Invest.	NASA Tech. Officer	CASE Category
Lambert, D. L.	MSFC/O'dell, C. R.	11-Astronomy

**NAS 9-17254**      **University of Texas - Austin**      **4761**  
 Study of attachment modes in the control of large space structures

Period	Obligations	
10/01/84-10/20/85	FY85: \$50,000	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Craig, R.	JSC/Zupp, G.	42-Astro Engr

**NASA'S UNIVERSITY PROGRAM  
TEXAS (Continued)**

**NASW 3296 University of Texas - Austin 4762**  
The contractor shall design, develop, construct and test a fully operational lunar laser ranging station

Period	Obligations	
12/01/79-11/30/85	FY85: \$366,301	TOTAL: \$1,480,936
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sturm, R.	GSFC/Shawe, M. E.	42-Astro Engr

**NCA 2-16 University of Texas - Austin 4763**  
Optimal relaxation factor concept for fast iterative solution of the Navier-Stokes equations

Period	Obligations	
05/01/85-06/01/86	FY85: \$7,000	TOTAL: \$7,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dulikravich, G. S.	ARC/Lomax, H.	41-Aero Engr

**NCA 2-34 University of Texas - Austin 4764**  
An infrared spectroscopic and polarimetric study of mass outflows from stars

Period	Obligations	
05/15/85-05/14/86	FY85: \$10,392	TOTAL: \$10,392
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dinerstein, H. L.	ARC/Werner, M. W.	11-Astronomy

**NCA 2-781201 University of Texas - Austin 4765**  
Studies of far-infrared emission lines in planetary nebulae and of the polarization properties of infrared clusters

Period	Obligations	
09/15/82-09/14/84	FY85:	TOTAL: \$15,223
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shields, G.	ARC/Werner, M. W.	11-Astronomy

**NCA 2-781401 University of Texas - Austin 4766**  
Test of the strange attractor hypothesis for turbulent channel flow

Period	Obligations	
09/15/84-09/14/86	FY85: \$77,625	TOTAL: \$77,625
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Swinney, H. L.	ARC/Chapman, G. T.	13-Physics
	ARC/Moin, P.	

**NCC 2-262 University of Texas - Austin 4767**  
Calculation of compressible flow fields

Period	Obligations	
09/01/83-08/31/85	FY85: \$23,981	TOTAL: \$51,788
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bertin, J. J.	ARC/Marvin, J. G.	41-Aero Engr
Cline, D. D.		

**NCC 2-286 University of Texas - Austin 4768**  
Crew selection training and performance

Period	Obligations	
02/01/84-10/31/85	FY85: \$110,000	TOTAL: \$189,857
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Helmreich, R. L.	ARC/Foushee, H. C.	62-Social Aspects
	ARC/Tanner, T. A.	

**NGR 44-012-152 University of Texas - Austin 4769**  
A program of planetary studies

Period	Obligations	
06/25/69-12/31/85	FY85: \$451,500	TOTAL: \$6,640,186
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, H. J.	HQ-EL/Brinton, H. C.	11-Astronomy
	HQ-EL/Hillman, J. J.	

**NGT 44-012-801 University of Texas - Austin 4770**  
NASA graduate student researchers program

Period	Obligations	
09/01/83-08/31/85	FY85:	TOTAL: \$27,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kyriakides, S.	HQ-LB/Owens, F. C.	47-Materials Engr

**NGT 44-012-802 University of Texas - Austin 4771**  
NASA graduate student researchers program

Period	Obligations	
04/15/83-04/14/86	FY85: \$6,600	TOTAL: \$35,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bash, F. N.	HQ-LB/Owens, F. C.	11-Astronomy

**NGT 44-012-803 University of Texas - Austin 4772**  
NASA graduate student researchers program

Period	Obligations	
06/01/84-08/31/86	FY85:	TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hull, D. G.	HQ-LB/Owens, F. C.	49-Engr, NEC
Speyer, J. L.		

**NGT 44-012-804 University of Texas - Austin 4773**  
NASA graduate student researchers program

Period	Obligations	
06/01/85-05/31/86	FY85: \$18,000	TOTAL: \$18,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, H. J.	HQ-LE/Owens, F. C.	11-Astronomy

**NSG 3198 University of Texas - Austin 4774**  
Acoustic properties of duct lining materials

Period	Obligations	
07/01/78-02/28/85	FY85:	TOTAL: \$135,760
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Blackstock, D. T.	LERC/Rice, E. J.	13-Physics
Panton, R. L.	LERC/Baumeister, K. J.	

**NSG 5379 University of Texas - Austin 4775**  
Ultraviolet spectroscopy of symbiotic stars, recurrent and old novae

Period	Obligations	
06/25/79-07/31/86	FY85: \$18,900	TOTAL: \$89,600
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lambert, D. L.	GSFC/Kondo, Y.	11-Astronomy
Smith, V. V.		

**NSG 7232 University of Texas - Austin 4776**  
Astrophysics of supermassive accretion disks

Period	Obligations	
05/01/76-08/31/86	FY85: \$32,000	TOTAL: \$238,171
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shields, G.	HQ-EZ/Stencel, R. E.	39-Env Sci, NEC
Wheeler, J. C.	HQ-EZ/Weiler, E. J.	



**NASA'S UNIVERSITY PROGRAM  
TEXAS (Continued)**

**NSG 7480 University of Texas - Austin 4777**  
The cellular bases of gravity-and light-induced geotropism

Period	Obligations	
08/15/78-10/31/85	FY85: \$55,000	TOTAL: \$327,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Roux, S. J.	HQ-EB/Halstead, T. W.	51-Biological Sci

**NAG 5-306 University of Texas - Dallas 4784**  
Ion drift meter research

Period	Obligations	
04/01/83-12/31/85	FY85: \$165,000	TOTAL: \$486,250
Prin. Invest.	NASA Tech. Officer	CASE Category
Heelis, R. A.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

**NSG 7505 University of Texas - Austin 4778**  
Solid state problems in the solar systems

Period	Obligations	
09/01/78-10/31/85	FY85: \$84,989	TOTAL: \$425,047
Prin. Invest.	NASA Tech. Officer	CASE Category
Smoluchowski, R.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAG 5-366 University of Texas - Dallas 4785**  
Research relative to plasma transport across the magneto-pause

Period	Obligations	
08/15/83-09/30/84	FY85:	TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Heikkila, W. J.	GSFC/Wales, R. O.	31-Atmos Sci

**NAG 1-320 University of Texas - Dallas 4779**  
Analysis of shuttle upper atmosphere mass spectrometer (SUMS) test, calibration, and flight data

Period	Obligations	
02/01/83-06/30/86	FY85:	TOTAL: \$10,012
Prin. Invest.	NASA Tech. Officer	CASE Category
Hoffman, J. H.	LARC/Duckett, R. J.	13-Physics
	LARC/Blanchard, R. C.	

**NAG 5-450 University of Texas - Dallas 4786**  
Dynamo field structure and related effects

Period	Obligations	
07/15/84-01/14/86	FY85:	TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Coley, W. R.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

**NAG 1-599 University of Texas - Dallas 4780**  
A study to define a mass spectrometer system for measurement of atmospheric constituents in transonic and continuous flow

Period	Obligations	
06/15/85-02/14/86	FY85: \$40,000	TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hoffman, J. H.	LARC/Wood, G. M.	13-Physics

**NAG 5-572 University of Texas - Dallas 4787**  
Locating the normal component of the magnetic field across the neutral sheet in the distant magnetotail

Period	Obligations	
07/01/85-06/30/86	FY85: \$37,342	TOTAL: \$37,342
Prin. Invest.	NASA Tech. Officer	CASE Category
Heikkila, W.	GSFC/Wales, R. O.	11-Astronomy

**NAG 2-366 University of Texas - Dallas 4781**  
Unmodeled dynamics and nonlinear control

Period	Obligations	
07/01/85-06/30/86	FY85: \$46,422	TOTAL: \$46,422
Prin. Invest.	NASA Tech. Officer	CASE Category
Hunt, C. R.	ARC/Meyer, G.	49-Engr, NEC

**NAG 9-99 University of Texas - Dallas 4788**  
Evaluation of the resource potential of lunar and regolith fines as a source of hydrogen and other volatiles

Period	Obligations	
02/01/85-02/01/86	FY85: \$15,000	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Carter, J. L.	JSC/McKay, D. S.	32-Geological Sci

**NAG 5-293 University of Texas - Dallas 4782**  
Ionospheric processes leading to magnetospheric plasma injection from Dynamics Explorer

Period	Obligations	
02/15/83-03/31/86	FY85:	TOTAL: \$41,306
Prin. Invest.	NASA Tech. Officer	CASE Category
Hanson, W.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

**NAGW 632 University of Texas - Dallas 4789**  
Atomic data of planetary and cometary interest

Period	Obligations	
04/01/84-03/31/86	FY85: \$24,248	TOTAL: \$47,248
Prin. Invest.	NASA Tech. Officer	CASE Category
Cunningham, A. J.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAG 5-305 University of Texas - Dallas 4783**  
Retarding potential analyzer research

Period	Obligations	
04/01/83-06/30/86	FY85: \$219,280	TOTAL: \$596,280
Prin. Invest.	NASA Tech. Officer	CASE Category
Hanson, W.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

**NAGW 634 University of Texas - Dallas 4790**  
Studies of impulsive penetration and viscous interaction

Period	Obligations	
05/01/84-04/30/85	FY85:	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hekkila, W. J.	HQ-EE/Wiskerchen, M. J.	13-Physics
	HQ-EE/Shawhan, S. D.	

**NASA'S UNIVERSITY PROGRAM**  
**TEXAS (Continued)**

**NAS 1-17399 University of Texas - Dallas 4791**  
 Support activities to maintain shuttle upper atmosphere mass spectrometer (SUMS) flight readiness  
*Period Obligations*  
 07/15/83-06/30/87 FY85: \$64,967 TOTAL: \$177,497  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hoffman, J. H. LARC/Blanchard, R. C.  
 LARC/Duckett, R. J. 19-Phys Sci, NEC

**NASW 3576 University of Texas - Dallas 4798**  
 Development of a mass and energy spectrometer system for analysis of gaseous environment  
*Period Obligations*  
 03/15/82-09/30/86 FY85: \$184,000 TOTAL: \$662,500  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hoffman, J. H. HQ-EL/Brunk, W. E.  
 HQ-EL/Brinton, H. C. 11-Astronomy

**NAS 5-25310 University of Texas - Dallas 4792**  
 Design, development, fabrication, test and calibration of the ion velocity instrument for the San Marco spacecraft  
*Period Obligations*  
 09/18/78-03/31/87 FY85: \$53,700 TOTAL: \$305,364  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hanson, W. B. GSFC/Adkins, R. E. 13-Physics

**NGL 44-004-026 University of Texas - Dallas 4799**  
 Investigations into the mechanism and rates of atmospheric mixing in the lower thermosphere  
*Period Obligations*  
 05/05/65-03/31/86 FY85: \$88,818 TOTAL: \$3,144,391  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Johnson, F. S. HQ-EL/Brinton, H. C.  
 HQ-EL/Brunk, W. E. 31-Atmos Sci

**NAS 5-26071 University of Texas - Dallas 4793**  
 Retarding potential analyzer instrument for Dynamics Explorer  
*Period Obligations*  
 02/10/80-07/31/84 FY85: TOTAL: \$343,796  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hanson, W. B. GSFC/Bullock, G. D. 41-Aero Engr

**NGL 44-004-130 University of Texas - Dallas 4800**  
 Selected studies in the space sciences  
*Period Obligations*  
 03/17/72-09/30/84 FY85: TOTAL: \$2,298,630  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hanson, W. B. HQ-E/Gaskins, M. A.  
 McClure, J. P. HQ-E/Devlin, J.  
 Hodges, R. R. 99-Multi-Discip

**NAS 5-28706 University of Texas - Dallas 4794**  
 Optical disks for the span nodes  
*Period Obligations*  
 11/06/84-11/05/85 FY85: \$57,096 TOTAL: \$57,096  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hanson, W. B. GSFC/King, J. H. 22-Computer Science  
 Heelis, R. A. GSFC/Thomas, V. L.  
 Chaney, R. C.

**NGR 44-004-120 University of Texas - Dallas 4801**  
 Space plasma physics data analysis program  
*Period Obligations*  
 02/09/71-09/30/85 FY85: \$130,000 TOTAL: \$1,665,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hanson, W. B. HQ-EE/Lynch, J. T.  
 HQ-EE/Shawhan, S. D. 31-Atmos Sci

**NAS 8-32831 University of Texas - Dallas 4795**  
 Retarding ion mass spectrometer for Dynamics Explorer  
*Period Obligations*  
 01/17/78-07/30/85 FY85: TOTAL: \$874,635  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hanson, W. B. MSFC/Chappell, C. R. 13-Physics  
 Hoffman, J. H. MSFC/Fields, S. A.

**NGT 44-013-800 University of Texas - Dallas 4802**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/84-05/31/85 FY85: \$18,000 TOTAL: \$33,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hanson, W. HQ-LB/Owens, F. C. 13-Physics

**NAS 8-33827 University of Texas - Dallas 4796**  
 Measurement of visible and UV emissions from energetic neutral atom precipitation definition phase study  
*Period Obligations*  
 08/12/80-11/30/87 FY85: \$120,000 TOTAL: \$298,875  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Tinsley, B. A. MSFC/Jones, C. T. 31-Atmos Sci  
 Rohrbaugh, D. P. MSFC/Ise, R.

**NSG 5085 University of Texas - Dallas 4803**  
 Particle spectrometer on board ISIS-2  
*Period Obligations*  
 11/01/75-08/31/86 FY85: \$30,000 TOTAL: \$330,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Heikkila, W. J. GSFC/Brace, L. H. 31-Atmos Sci  
 Klumpar, D. M.

**NAS 8-35011 University of Texas - Dallas 4797**  
 Definition phase for thermal ion dynamics experiment for OPEN  
*Period Obligations*  
 08/26/82-09/30/86 FY85: TOTAL: \$84,996  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hofman, J. H. MSFC/Chappell, C. R. 11-Astronomy  
 Heelis, R. A. MSFC/Fields, S. A.  
 Hanson, W. B.

**NSG 5087 University of Texas - Dallas 4804**  
 Ion composition research on ISIS-2  
*Period Obligations*  
 12/01/75-10/31/86 FY85: \$20,000 TOTAL: \$260,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Hoffman, J. H. GSFC/Brace, L. H. 31-Atmos Sci  
 Dodson, W. H.

**NASA'S UNIVERSITY PROGRAM  
TEXAS (Continued)**

**NAG 2-26 Univ of Texas Medical Branch - Galveston 4805**  
Central otolithic mechanisms in non-human primates

Period	Obligations
01/01/80-11/30/85	FY85: \$70,460 TOTAL: \$317,063
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Perachio, A. A.	ARC/Daunton, N. G.
Carreta, M. J.	51-Biological Sci
Kevette, G. A.	

**NAG 2-186 Univ of Texas Medical Branch - Galveston 4806**  
Investigations of otolith responses using ground based vestibular research facility

Period	Obligations
07/01/82-06/30/86	FY85: \$108,945 TOTAL: \$267,577
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Correia, M. J.	ARC/Davinton, N. G.
Perachio, A. A.	51-Biological Sci
Anderson, D. J.	

**NAG 2-260 Univ of Texas Medical Branch - Galveston 4807**  
The identification and pharmacology of neurotransmitters in the vestibular nuclei

Period	Obligations
12/01/83-11/30/85	FY85: \$75,000 TOTAL: \$159,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Gallagher, J. P.	ARC/Daunton, N. G.
	51-Biological Sci

**NAG 2-293 Univ of Texas Medical Branch - Galveston 4808**  
Morphological and electrophysiological studies of the vestibular afferent efferent system

Period	Obligations
04/01/84-03/31/86	FY85: \$101,994 TOTAL: \$161,994
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Correia, M. H.	ARC/Daunton, N. G.
	ARC/Corcoran, M. L.
	51-Biological Sci

**NGT 44-088-800 Univ of Texas Medical Branch - Galveston 4809**  
NASA graduate student researchers program

Period	Obligations
09/01/81-08/31/84	FY85: TOTAL: \$36,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Correia, M. J.	HQ-LB/Owens, F. C.
	51-Biological Sci

**NAGW 140 Univ of Texas, Health Sci Ctr-Dallas 4810**  
Influence of suspension-hypokinesia on skeletal/ muscle

Period	Obligations
02/01/81-01/31/86	FY85: \$50,000 TOTAL: \$256,499
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Templeton, G. H.	HQ-EB/Halstead, T. W.
Lutko, J. L.	51-Biological Sci

**NAS 9-16044 Univ of Texas, Health Sci Ctr-Dallas 4811**  
Cardiovascular adaption to zero gravity

Period	Obligations
01/17/80-10/31/86	FY85: \$308,294 TOTAL: \$1,405,826
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Blomquist, C. G.	JSC/Lintott, J.
	59-Life Sci, NEC

**NAS 9-17167 Univ of Texas, Health Sci Ctr-Dallas 4812**  
Services of SL-4 payload specialist

Period	Obligations
01/20/84-06/30/86	FY85: \$100,000 TOTAL: \$275,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Gaffney, F. A.	JSC/Harnage, M. J., Jr.
	49-Engr, NEC

**NAS 9-17194 Univ of Texas, Health Sci Ctr-Dallas 4813**  
Study of renal store formation

Period	Obligations
09/01/84-08/31/85	FY85: TOTAL: \$140,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Pak, Y. C.	JSC/Cintron-trevino, N.
	59-Life Sci, NEC

**NGT 44-080-800 Univ of Texas, Health Sci Ctr-Dallas 4814**  
NASA graduate student researchers program

Period	Obligations
05/01/85-04/30/86	FY85: \$18,000 TOTAL: \$18,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Templeton, G. H.	HQ-LE/Owens, F. C.
	13-Physics

**NSG 9026 Univ of Texas, Health Sci Ctr-Dallas 4815**  
Cardiovascular effect of variations in habitual levels of physical activity

Period	Obligations
03/01/75-01/01/86	FY85: \$50,000 TOTAL: \$551,722
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Blomquist, C. G.	JSC/Bungo, M.
	56-Medical Sciences

**NAG 2-239 Univ of Texas-Hlth Science Ctr - Houston 4816**  
Biochemical adaptations of anti-gravity muscle fibers to disuse atrophy

Period	Obligations
07/01/83-10/31/85	FY85: \$67,900 TOTAL: \$126,099
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Booth, F. W.	ARC/Ellis, S.
	51-Biological Sci

**NAG 2-232 Univ of Texas-Hlth Science Ctr - Houston 4817**  
Determine the effects of gravitational changes on mammalian systems developing in vitro and in vivo

Period	Obligations
03/01/85-02/28/86	FY85: \$45,053 TOTAL: \$45,053
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Duke, P. J.	ARC/Daligcon, B. C.
	51-Biological Sci

**NAG 9-23 Univ of Texas-Hlth Science Ctr - Houston 4818**  
The factors determining the incidence of limb bends upon decompression to altitude

Period	Obligations
04/01/82-03/31/86	FY85: \$66,870 TOTAL: \$234,337
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Hills, B. A.	JSC/Waligora, J.
	51-Biological Sci

# **NASA'S UNIVERSITY PROGRAM** **TEXAS (Continued)**

**NAGW 438 Univ of Texas-Hlth Science Ctr - Houston 4819**  
Growth and differentiation of mammalian embryonic tissues  
exposed to hypergravity in vitro and in vivo  
*Period* *Obligations*  
03/01/83-05/31/85 FY85: TOTAL: \$86,880  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Duke, P. J. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAS 9-16688 Univ of Texas-Hlth Science Ctr - Houston 4820**  
Long term bedrest in the study of calcium dynamics  
*Period* *Obligations*  
09/28/82-12/01/86 FY85: \$140,000 TOTAL: \$366,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schneider, V. S. JSC/Johnson, P. 56-Medical Sciences

**NAS 9-17403 Univ of Texas-Hlth Science Ctr - Houston 4821**  
Research in biological separations and cell culture  
*Period* *Obligations*  
06/01/85-05/31/88 FY85: \$1,054,091 TOTAL: \$1,054,091  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tom, B. H. JSC/Morrison, D. R. 51-Biological Sci

**NAS 9-17522 Univ of Texas-Hlth Science Ctr - Houston 4822**  
Apparatus and techniques for performance of surgery in zero-G  
technology development of surgical procedures  
*Period* *Obligations*  
09/01/85-09/01/86 FY85: \$70,000 TOTAL: \$70,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Houtchens, B. JSC/Logan, J. 56-Medical Sciences

**NAG 9-5 Univ of Texas-Hlth Sci Ctr-San Antonio 4823**  
The effect of stress on human blood platelets  
*Period* *Obligations*  
03/01/80-07/01/86 FY85: \$40,000 TOTAL: \$293,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
George, J. N. JSC/Johnson, P. 56-Medical Sciences  
Levine, S. P.

**NAS 9-16366 Univ of Texas-Hlth Sci Ctr-San Antonio 4824**  
Quantitation of renal prostaglandins  
*Period* *Obligations*  
04/27/81-04/30/86 FY85: TOTAL: \$152,500  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lifschitz, M. JSC/Leach, C. 56-Medical Sciences

**NAG 2-145 Brigham Young University 4826**  
Pioneer 10 and 11 (Jupiter and Saturn) magnetometer experim-  
ents  
*Period* *Obligations*  
01/01/82-09/30/85 FY85: \$30,511 TOTAL: \$110,762  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Jones, D. E. ARC/Fimmel, R. O. 19-Phys Sci, NEC

**NAG 1-283 University of Utah 4827**  
Acoustic propagation in a thermally stratified atmosphere  
*Period* *Obligations*  
07/01/82-09/30/85 FY85: \$21,464 TOTAL: \$136,198  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Van Moorhem, W. K. LARC/Willshire, W. L., Jr. 13-Physics  
LARC/Preisser, J. S.

**NAG 1-608 University of Utah 4828**  
Characterization of vapors related to organometallic vapor phase  
epitaxy omvpe growth of algaip  
*Period* *Obligations*  
07/01/85-06/30/86 FY85: \$30,000 TOTAL: \$30,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Rosenberger, F. F. LARC/Clark, I. O. 43-Chem Engr  
Stringfellow, G. B. LARC/Fripp, A. L.

**NAG 2-108 University of Utah 4829**  
Mechanisms of action of glucocorticosteroids and fluoride ion  
on the growing skeleton  
*Period* *Obligations*  
05/01/81-12/31/85 FY85: \$55,000 TOTAL: \$442,800  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Jee, W. S. ARC/Young, D. R. 51-Biological Sci  
Woodbury, D. M.

**NAG 3-327 University of Utah 4830**  
Backward-wave oscillators for the frequency range from 600ghz  
to 1800ghz  
*Period* *Obligations*  
10/30/82-01/30/86 FY85: \$150,000 TOTAL: \$440,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Grow, R. W. LERC/Heighway, J. 45-Elec Engr  
LERC/Stankiewicz, N.

**NAG 5-127 University of Utah 4831**  
Global scale diagnosis of satellite data  
*Period* *Obligations*  
07/01/81-06/31/86 FY85: \$49,984 TOTAL: \$191,474  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Paegle, J. N. GSFC/Kalnay, E. 31-Atmos Sci

**NAG 5-164 University of Utah 4832**  
Study of tectonic activity in the basin and range province and  
the San Andres Fault system  
*Period* *Obligations*  
04/15/81-01/31/86 FY85: TOTAL: \$85,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Smith, R. B. GSFC/Lowman, P. D., Jr. 32-Geological Sci

## **UTAH**

**NAG 1-391 Brigham Young University 4825**  
Development of raster graphics subroutine package  
*Period* *Obligations*  
08/01/83-12/31/85 FY85: \$64,940 TOTAL: \$140,198  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stephenson, M. B. LARC/Lansing, D. L. 22-Computer Science  
LARC/Hogge, J. E.

**NASA'S UNIVERSITY PROGRAM**  
**UTAH (Continued)**

**NAGW 82** **University of Utah** **4833**  
An experimental investigation of the angular scattering and backscattering behavior of the simulated clouds of the outer planets

<i>Period</i>	<i>Obligations</i>	
06/01/80-09/30/84	FY85:	TOTAL: \$93,687
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sassen, K.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 95** **University of Utah** **4834**  
Identifying environmental features for land management decisions

<i>Period</i>	<i>Obligations</i>	
08/01/80-07/31/87	FY85: \$100,000	TOTAL: \$500,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wright, P. M.	HQ-EL/Tuyahov, A. J.	39-Env Sci, NEC
Ridd, M. K.		

**NAS 5-28753** **University of Utah** **4835**  
LANDSAT thematic mapper data investigation a reconstruction of high levels of great salt lake, utah in lake holocene time

<i>Period</i>	<i>Obligations</i>	
08/15/85-12/14/88	FY85: \$249,991	TOTAL: \$249,991
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Currey, D. R.	GSFC/Oseroff, H.	32-Geological Sci

**NAS 9-17345** **University of Utah** **4836**  
Pulmonary function and blood gas assessment and support system for space station health maintenance facility definition of concepts and design requirements

<i>Period</i>	<i>Obligations</i>	
06/15/85-12/15/85	FY85: \$45,000	TOTAL: \$45,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Westenskow, D.	JSC/Reynolds, M. A.	56-Medical Sciences

**NAS 9-17425** **University of Utah** **4837**  
Development of a computerized medical data management system for space station

<i>Period</i>	<i>Obligations</i>	
07/01/85-01/01/86	FY85: \$50,000	TOTAL: \$50,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gardner, R.	JSC/Logan, J. S.	56-Medical Sciences
	JSC/Reynolds, M.	

**NCA 2-821401** **University of Utah** **4838**  
Surface representation for the graphical display of structured data

<i>Period</i>	<i>Obligations</i>	
03/01/84-12/31/85	FY85: \$29,935	TOTAL: \$45,435
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Barnhill, R. E.	ARC/Watson, V.	21-Mathematics

**NGT 45-003-801** **University of Utah** **4839**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/82-05/31/85	FY85:	TOTAL: \$35,890
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McCoy, R. M.	HQ-LB/Owens, F. C.	59-Life Sci, NEC

**NGT 45-003-802** **University of Utah** **4840**  
NASA graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/83-05/31/85	FY85:	TOTAL: \$25,015
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McCoy, R. M.	HQ-LB/Owens, F. C.	32-Geological Sci

**NSG 1534** **University of Utah** **4841**  
Fluid dynamics of crystallization from vapors

<i>Period</i>	<i>Obligations</i>	
06/01/78-09/30/85	FY85: \$86,292	TOTAL: \$638,523
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rosenberger, F. E.	LARC/Fripp, A. L.	47-Materials Engr
	LARC/Crouch, R. K.	

**NAG 5-455** **Utah State University** **4842**  
Global dynamic ionospheric modeling based upon satellite observations

<i>Period</i>	<i>Obligations</i>	
08/01/84-10/31/85	FY85:	TOTAL: \$34,453
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sojka, J. J.	GSFC/Bullock, G. D.	19-Phys Sci, NEC
	GSFC/Hoffman, R. A.	

**NAG 5-603** **Utah State University** **4843**  
Experimental studies of turbulent electrostatic waves in equatorial spread F, the equatorial electrojet and in two active space plasma events

<i>Period</i>	<i>Obligations</i>	
03/01/82-11/30/85	FY85: \$80,005	TOTAL: \$210,171
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Baker, K. D.	GSFC/Early, L. J.	13-Physics
Ulwick, J. C.	GSFC/Pless, R. H.	
Ulwick, J. C.		

**NAG 5-607** **Utah State University** **4844**  
Sounding rocket experiments using tethered payloads

<i>Period</i>	<i>Obligations</i>	
07/01/82-04/30/86	FY85: \$44,989	TOTAL: \$205,172
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Raitt, W. J.	GSFC/Early, L. J.	13-Physics
Williamson, P. R.	GSFC/Pless, R. H.	
Parish, J. L.		

**NAGW 77** **Utah State University** **4845**  
The flow of plasma in the solar terrestrial environment

<i>Period</i>	<i>Obligations</i>	
07/01/80-04/30/86	FY85: \$197,000	TOTAL: \$1,052,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schunk, R. W.	HQ-EE/Butler, D. M.	39-Env Sci, NEC
	HQ-EE/Hudson, R. D.	

**NAGW 105** **Utah State University** **4846**  
A study of magnetospheric/ionospheric/atmospheric coupling via energetic heavy ions

<i>Period</i>	<i>Obligations</i>	
11/01/80-01/31/85	FY85:	TOTAL: \$138,998
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Torr, M. R.	HQ-EE/Lynch, J. T.	19-Phys Sci, NEC
	HQ-EE/Shawhan, S. D.	

# **NASA'S UNIVERSITY PROGRAM** **UTAH (Continued)**

**NAGW 354** **Utah State University** **4847**  
Balloonborne stratosphere ultraviolet imagery equipment  
*Period* *Obligations*  
05/01/82-06/14/85 FY85: TOTAL: \$177,893  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Torr, M. R. HQ-EE/Watson, R. T. 31-Atmos Sci  
HQ-EE/Hilsenrath, E.

**NAS 8-33992** **Utah State University** **4854**  
Development, integration, mission support and data analysis of the imaging spectrometric observatory experiment for Spacelab mission I  
*Period* *Obligations*  
07/25/80-12/31/87 FY85: \$220,000 TOTAL: \$2,594,971  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Torr, M. R. MSFC/Jones, C. T. 31-Atmos Sci  
MSFC/Ise, R.

**NAGW 406** **Utah State University** **4848**  
Studies of thermospheric vibrationally excited n2 and molecular constituents and the F region winter anomaly  
*Period* *Obligations*  
11/01/82-09/30/85 FY85: \$62,444 TOTAL: \$145,929  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Torr, D. G. HQ-EE/Lynch, J. T. 12-Chemistry  
HQ-EE/Shawhan, S. D.

**NAS 9-17484** **Utah State University** **4855**  
Helmet mounted CO2 sensor  
*Period* *Obligations*  
10/01/85-04/01/87 FY85: \$100,000 TOTAL: \$100,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Bingham, G. E. JSC/Marmolejo, J. 46-Mech Engr

**NAGW 689** **Utah State University** **4849**  
The dynamics of the Venus ionosphere  
*Period* *Obligations*  
01/01/85-12/31/85 FY85: \$45,000 TOTAL: \$45,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Miller, K. L. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Brunk, W.

**NCC 2-139** **Utah State University** **1856**  
Studies on maximum yield of wheat and other small grains in controlled environments  
*Period* *Obligations*  
05/01/81-03/31/86 FY85: \$135,823 TOTAL: \$421,711  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Salisbury, F. B. ARC/MacElroy, R. D. 51-Biological Sci  
Bugbee, B.

**NAGW 775** **Utah State University** **4850**  
Measurement of radicals in the stratosphere using balloon borne ultraviolet spectroscopy  
*Period* *Obligations*  
07/01/85-06/30/86 FY85: \$153,885 TOTAL: \$153,885  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Torr, M. R. HQ-EE/Demore, W. B. 31-Atmos Sci  
HQ-EE/Hampson, R. F.

**NGT 45-003-803** **Utah State University** **4857**  
NASA graduate student researchers program  
*Period* *Obligations*  
06/01/85-05/31/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Torr, D. G. HQ-LE/Owens, F. C. 13-Physics

**NAG10-14** **Utah State University** **4851**  
Gravitropism in leafy dicot stems  
*Period* *Obligations*  
01/29/85-01/29/86 FY85: \$40,495 TOTAL: \$40,495  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Salisbury, F. B. KSC/Knott, W. M. 32-Geological Sci

**NSG 7567** **Utah State University** **4858**  
An examination of the clinostat problem using leafy plants  
*Period* *Obligations*  
07/01/71-06/30/85 FY85: TOTAL: \$176,937  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Salisbury, F. B. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAS 5-26849** **Utah State University** **4852**  
Conduct a definitization phase of the auroral images of magnetospheric energy for the OPEN project  
*Period* *Obligations*  
05/24/82-09/30/86 FY85: \$24,651 TOTAL: \$273,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Torr, M. R. GSFC/O'brien, J. J. 19-Phys Sci, NEC

**NAG 8-389** **Middlebury College** **4859**  
Investigations of the Puppis A X-ray emission line spectrum  
*Period* *Obligations*  
12/08/80-12/31/86 FY85: \$22,450 TOTAL: \$69,473  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Winkler, P. F., Jr. MSFC/Johnson, W. G. 11-Astronomy

**NAS 5-28185** **Utah State University** **4853**  
Design, fabrication, and test of DIRBE external calibrator (DEC)  
*Period* *Obligations*  
07/11/84-10/15/85 FY85: \$423,415 TOTAL: \$728,415  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Wyatt, C. GSFC/Minott, P. 41-Aero Engr  
Thurgood, A.

**NAS 5-28430** **Univ of Vermont & St Agricultural Col.** **4860**  
Field and laboratory support for the characterization of key remote sensing variables associated with a forest under stress due to acid rain deposition  
*Period* *Obligations*  
07/10/84-10/10/85 FY85: \$7,744 TOTAL: \$17,244  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Vogelmann, H. W. GSFC/Williams, D. L. 54-Env Biology

# **NASA'S UNIVERSITY PROGRAM** **VERMONT (Continued)**

**NAS 5-28431 Univ of Vermont & St Agricultural Col. 4861**  
Field and laboratory support for characterizing red spruce forests in Vermont using remote sensing techniques

Period	Obligations	
06/25/84-12/25/85	FY85: \$11,708	TOTAL: \$22,404
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Donnelly, J. R.	GSFC/Williams, D. L.	54-Env Biology

**NSG 7453 Univ of Vermont & St Agricultural Col. 4862**  
Development of a remote sensing applications program in Vermont

Period	Obligations	
06/01/78-05/31/86	FY85: \$41,000	TOTAL: \$966,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Whitmore, R. A.	HQ-EL/Tuyahov, A. J.	39-Env Sci, NEC

## **VIRGINIA**

**NAG 1-268 Christopher Newport College 4863**  
Bacterial electrochemical asymmetry potential (BEAP)

Period	Obligations	
05/11/82-08/15/86	FY85:	TOTAL: \$13,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sacks, L. J.	LARC/Rhinehart, R. P.	12-Chemistry

**NAG 1-431 Christopher Newport College 4864**  
Determination of sound speed and attenuation for ultrasonic waves in composite materials

Period	Obligations	
12/07/83-10/31/85	FY85: \$57,050	TOTAL: \$101,050
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, B. T.	LARC/Heyman, J. S.	13-Physics
Buoncrisiani, A. M.	LARC/Winfrey, W. P.	

**NAG 1-488 Christopher Newport College 4865**  
An analysis of doping modulated superlattice structures

Period	Obligations	
06/01/84-05/31/85	FY85:	TOTAL: \$14,966
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Buoncrisiani, A. M.	LARC/Byvik, C. E.	13-Physics
	LARC/Conway, E. J.	

**NAG 1-523 Christopher Newport College 4866**  
Laser polymerization for space application

Period	Obligations	
09/18/84-12/31/85	FY85: \$6,530	TOTAL: \$11,655
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chang, C. K.	LARC/Conway, E. J.	12-Chemistry
	LARC/Miner, G. A.	

**NAG 1-585 Christopher Newport College 4867**  
Analysis of materials for a tunable solid state laser

Period	Obligations	
06/01/85-04/30/86	FY85: \$19,821	TOTAL: \$19,821
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Buoncrisiani, A. M.	LARC/Byvik, C. E.	13-Physics

**NSG 1614 Christopher Newport College 4868**  
Theoretical study of radiation effects in composite materials for space use

Period	Obligations	
07/01/79-05/31/86	FY85: \$12,542	TOTAL: \$187,371
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chang, C. K.	LARC/Wilson, J. W.	19-Phys Sci, NEC
	LARC/Conway, E. J.	

**NAG 1-144 College of William And Mary 4869**  
Liquid crystallinity in semi-rigid polymers and in model compounds

Period	Obligations	
02/15/81-08/31/83	FY85:	TOTAL: \$64,869
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Orwoll, R. A.	LARC/St Clair, T. L.	12-Chemistry

**NAG 1-166 College of William And Mary 4870**  
Large wind turbine acoustics

Period	Obligations	
03/12/81-11/30/85	FY85: \$50,057	TOTAL: \$211,823
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hubbard, H. H.	LARC/Powell, C. A.	13-Physics

**NAG 1-237 College of William And Mary 4871**  
Characterization of relationship of cure cycle processing properties

Period	Obligations	
12/01/81-11/30/85	FY85: \$84,828	TOTAL: \$318,275
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kranbuehl, D. E.	LARC/Freeman, W. T., Jr.	12-Chemistry
	LARC/Nelson, J. B.	

**NAG 1-360 College of William And Mary 4872**  
Expert database management system

Period	Obligations	
08/16/83-01/15/85	FY85:	TOTAL: \$31,968
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Feyock, S.	LARC/Shipman, F. S.	22-Computer Science
	LARC/Shoosmith, J. N.	

**NAG 1-422 College of William And Mary 4873**  
Program of research in helicopter aerodynamic theory

Period	Obligations	
10/20/83-10/19/85	FY85: \$28,900	TOTAL: \$57,740
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Runyan, H. L.	LARC/Edwards, J. W.	41-Aero Engr

**NAG 1-469 College of William And Mary 4874**  
An expert system for real-time aircraft Fault diagnosis

Period	Obligations	
03/26/84-08/31/85	FY85:	TOTAL: \$47,917
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Collins, R.	LARC/Morello, S. A.	22-Computer Science
Feyock, S.		

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NAG 1-533 College of William And Mary 4875**  
 A software toolbox for robotics  
*Period Obligations*  
 10/15/84-10/14/85 FY85: \$42,987 TOTAL: \$42,987  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Sanwal, J. C. LARC/Harrison, F. W., Jr.  
 22-Computer Science  
 Bynum, W. L. LARC/Pennington, J. E.

**NAG 1-534 College of William And Mary 4876**  
 Specification, design, and implementation of a toolset command language via rapid prototyping  
*Period Obligations*  
 11/01/84-05/31/85 FY85: \$8,307 TOTAL: \$8,307  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Collins, W. R. LARC/Senn, E. H. 22-Computer Science  
 Noonan, R. E. LARC/Voight, S. J.

**NAG 1-536 College of William And Mary 4877**  
 Specifying and developing image processing software using algebraic abstract data types  
*Period Obligations*  
 10/25/84-10/24/85 FY85: \$29,632 TOTAL: \$29,632  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Miller, K. LARC/Williams, J. R.  
 29-Math/Computer, NEC  
 LARC/Hogge, J. E.

**NAG 1-550 College of William And Mary 4878**  
 Development and evaluation of analytical models for space station systems analysis  
*Period Obligations*  
 01/01/85-12/31/85 FY85: \$56,580 TOTAL: \$56,580  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Brewer, D. A. LARC/Hall, J. B. 59-Life Sci, NEC  
 LARC/Lovelace, U. M.

**NAG 1-557 College of William And Mary 4879**  
 Development of a unified dynamic structural mechanics theory for beams  
*Period Obligations*  
 01/01/85-12/31/85 FY85: \$43,100 TOTAL: \$43,100  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Kruszewski, E. T. LARC/Thomson, R. G. 41-Aero Engr  
 LARC/Hayduk, R. J.

**NAG 1-593 College of William And Mary 4880**  
 Radiation effects on high performance polymers  
*Period Obligations*  
 06/01/85-02/28/86 FY85: \$8,206 TOTAL: \$8,206  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Orwoll, R. A. LARC/Sykes, G. F. 12-Chemistry

**NAG 3-232 College of William And Mary 4881**  
 A high order language for a system of closely coupled processing elements  
*Period Obligations*  
 12/15/81-09/13/85 FY85: TOTAL: \$112,547  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Feyock, S. LERC/Arpasi, D. J. 22-Computer Science  
 Collins, W. R. LERC/Szuch, J. R.

**NAS 1-17303 College of William And Mary 4882**  
 Research in the area of physical sciences  
*Period Obligations*  
 04/25/83-04/24/86 FY85: \$42,636 TOTAL: \$165,591  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Unavailable LARC/Prior, E. J. 99-Multi-Discip

**NCC 1-40 College of William And Mary 4883**  
 Tire nonlinear model  
*Period Obligations*  
 04/16/80-09/30/85 FY85: \$75,389 TOTAL: \$389,140  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Anderson, C. M. LARC/Tanner, J. A. 46-Mech Engr

**NCC 1-43 College of William And Mary 4884**  
 Halogen occultation experiment (HALOE) science investigation  
*Period Obligations*  
 08/01/80-12/31/85 FY85: \$59,325 TOTAL: \$240,177  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Benner, D. C. LARC/Sullivan, E. M. 31-Atmos Sci  
 LARC/Russell, J. M., III

**NCC 1-50 College of William And Mary 4885**  
 Quantitative ultrasonic imaging  
*Period Obligations*  
 02/09/81-04/30/86 FY85: \$103,109 TOTAL: \$351,197  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Welch, C. LARC/Heath, D. M. 13-Physics

**NCC 1-61 College of William And Mary 4886**  
 Advanced concepts in solar occultation remote sensing  
*Period Obligations*  
 01/05/82-10/15/84 FY85: TOTAL: \$77,814  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Rinsland, C. P. LARC/Seals, R. K. 31-Atmos Sci  
 LARC/Sullivan, E. M.

**NCC 1-69 College of William And Mary 4887**  
 Wall-interference assessment in three-dimensional slotted-wall wind tunnels  
*Period Obligations*  
 06/16/82-10/15/85 FY85: \$44,544 TOTAL: \$175,262  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Kemp, W. B., Jr. LARC/Adcock, J. B. 41-Aero Engr  
 LARC/Barnwell, R. W.

**NCC 1-72 College of William And Mary 4888**  
 Ultrasonic diagnosis of skin burns in humans  
*Period Obligations*  
 08/05/82-09/30/85 FY85: TOTAL: \$110,455  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Winter, R. LARC/Cantrell, J. H. 19-Phys Sci, NEC

**NCC 1-75 College of William And Mary 4889**  
 Study of static and dynamic stress effects in nonlinear solids  
*Period Obligations*  
 12/06/82-12/02/85 FY85: \$50,980 TOTAL: \$135,405  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Namkung, M. LARC/Heyman, J. S. 13-Physics  
 LARC/Cantrell, J. H.



**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NCC 1-77 College of William And Mary 4890**  
 Computational investigations of heterogeneous processes  
*Period Obligations*  
 03/01/83-10/31/85 FY85: TOTAL: \$81,325  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Krakauer, H. LARC/Phillips, D. H. 19-Phys Sci, NEC

**NCC 1-78 College of William And Mary 4891**  
 Multidimensional scaling approach to workload assessment in pilots  
*Period Obligations*  
 03/16/83-12/31/84 FY85: TOTAL: \$77,155  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Null, C. H. LARC/Pope, A. T. 69-Psych, NEC  
 Bloch, R. M.

**NCC 1-80 College of William And Mary 4892**  
 High resolution spectroscopy to support atmospheric measurements  
*Period Obligations*  
 07/07/83-03/31/86 FY85: \$57,502 TOTAL: \$139,426  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Benner, D. C. LARC/Rinsland, C. P. 13-Physics  
 LARC/Rogowski, R. S.

**NCC 1-82 College of William And Mary 4893**  
 Biogenic modulation of methane in the global troposphere  
*Period Obligations*  
 02/10/84-01/31/86 FY85: \$42,618 TOTAL: \$78,951  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bartlett, K. B. LARC/Harriss, R. C. 31-Atmos Sci  
 LARC/Sebacher, D. I.

**NCC 1-83 College of William And Mary 4894**  
 Analysis of the thermal and momentum budgets of the stratosphere utilizing Nimbus 7 satellite temperature data  
*Period Obligations*  
 02/10/84-04/30/85 FY85: TOTAL: \$19,993  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Gapczynski, J. P. LARC/Grose, W. L. 31-Atmos Sci

**NCC 1-86 College of William And Mary 4895**  
 Stratosphere sounding unit (SSD) data and Nimbus 7 lms measurement  
*Period Obligations*  
 05/04/84-08/31/85 FY85: \$3,200 TOTAL: \$36,400  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Austin, J. LARC/Sullivan, E. M. 31-Atmos Sci

**NCC 1-91 College of William And Mary 4896**  
 Data inversion and validation software for the halogen occultation experiment  
*Period Obligations*  
 12/01/84-10/31/85 FY85: \$113,101 TOTAL: \$113,101  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Gordley, L. W. LARC/Sullivan, E. M. 31-Atmos Sci  
 LARC/Russell, J. M.

**NSG 1435 College of William And Mary 4897**  
 Development of a multi-target compiler writing system  
*Period Obligations*  
 07/11/77-05/31/85 FY85: TOTAL: \$467,242  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Noonan, R. E. LARC/Senn, E. H. 21-Mathematics  
 Collins, W. R. LARC/Voigt, S. J.

**NSG 1626 College of William And Mary 4898**  
 Investigation of portability techniques for a large flight-oriented programming language  
*Period Obligations*  
 06/01/79-08/31/84 FY85: TOTAL: \$143,645  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Feyock, S. LARC/Foudriat, E. C. 22-Computer Science  
 LARC/Will, R. W.

**NSG 7416 College of William And Mary 4899**  
 Research on turbulence in plasmas  
*Period Obligations*  
 12/01/77-08/31/85 FY85: TOTAL: \$264,002  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Montgomery, D. C. HQ-EE/Lynch, J. T. 13-Physics  
 HQ-EE/Shawhan, S. D.

**NAG 2-343 Estrn Va Med Schl-Estrn Va Med 4900**  
**Authority**  
 Effects of weightlessness on aurelia ephyra differentiation  
*Period Obligations*  
 01/01/85-12/31/85 FY85: \$20,000 TOTAL: \$20,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Spangenberg, D. B. ARC/Corcoran, M. L. 51-Biological Sci

**NAGW 530 Estrn Va Med Schl-Estrn Va Med 4901**  
**Authority**  
 Effects of weightlessness on aurelia ephyra differentiation and statolith synthesis  
*Period Obligations*  
 02/01/84-01/31/85 FY85: TOTAL: \$5,234  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Spangenberg, D. HQ-EB/Halstead, T. W. 51-Biological Sci

**NAS 5-27587 George Mason University 4902**  
 Comprehensive analysis, design, and proof-of concept implementation services in human factors research and development  
*Period Obligations*  
 02/16/83-02/16/85 FY85: TOTAL: \$84,090  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Mitchell, C. M. GSFC/Truskowski, W. F. 22-Computer Science

**NAG 3-605 Hampden-Sydney College 4903**  
 High temperature high radiation tolerance switches using double injection deep impurity silicon devices  
*Period Obligations*  
 01/21/85-01/20/86 FY85: \$30,992 TOTAL: \$30,992  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Joyner, W. T. LERC/Sundberg, G. R. 13-Physics

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NAG 1-400 Hampton Institute 4904**  
 Advanced solar energetics  
*Period Obligations*  
 09/01/83-08/31/86 FY85: \$144,595 TOTAL: \$464,013  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Venable, D. D. LARC/Conway, E. J. 13-Physics  
 LARC/Williams, M. D.

**NAG 1-415 Hampton Institute 4905**  
 Solution of some problems in applied mathematics using  
 MACSYMA  
*Period Obligations*  
 10/01/83-09/30/85 FY85: \$133,525 TOTAL: \$392,404  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Shah, S. N. LARC/Shoosmith, J. N.  
 29-Math/Computer, NEC

**NAG 1-441 Hampton Institute 4906**  
 Direct solar pumped iodine laser amplifier  
*Period Obligations*  
 03/01/84-02/28/86 FY85: \$68,316 TOTAL: \$108,408  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Han, K. S. LARC/Jalufka, N. W. 13-Physics  
 LARC/Conway, E. J.

**NAG 1-450 Hampton Institute 4907**  
 Architectural design of a continuously manned space station  
 individual and total architectural configuration  
*Period Obligations*  
 02/01/84-03/31/86 FY85: \$165,151 TOTAL: \$282,598  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Spencer, J. H. LARC/Hall, J. B., Jr. 49-Engr, NEC  
 Northen, O. LARC/Perner, C. D.

**NAG 1-477 Hampton Institute 4908**  
 Electron transport and charge buildup in multi layered configurations  
*Period Obligations*  
 09/01/84-05/31/86 FY85: \$47,193 TOTAL: \$69,766  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Buck, W. LARC/Townsend, L. W. 13-Physics  
 LARC/Conway, E. J.

**NAG 1-544 Hampton Institute 4909**  
 Design and implementation of cost effective algorithms for direct  
 solution of banded linear systems on the vector processor system  
 32  
*Period Obligations*  
 01/01/85-12/31/85 FY85: \$46,931 TOTAL: \$46,931  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Samba, A. S. LARC/Lambiotte, J. J., Jr. 21-Mathematics  
 LARC/Shoosmith, J. N.

**NAGW 407 Hampton Institute 4910**  
 Radiative transfer model for remote sensing of laser induced  
 fluorescence of phytoplankton in non-homogeneous turbid  
 waters  
*Period Obligations*  
 10/01/82-01/31/85 FY85: TOTAL: \$103,733  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Venable, D. D. HQ-EE/Esaias, W. E. 33-Oceanography  
 HQ-EE/Wilson, W. S.

**NCA 1-63 Hampton Institute 4911**  
 Continuing summer student training program in engineering  
*Period Obligations*  
 05/13/85-05/12/88 FY85: \$25,000 TOTAL: \$25,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bowman, W. LARC/Heath, R. A. 41-Aero Engr

**NGT 47-020-800 Hampton Institute 4912**  
 Summer faculty fellowship program in research  
*Period Obligations*  
 01/01/82-03/31/85 FY85: TOTAL: \$642,823  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Spencer, J. W. HQ-LB/Owens, F. C. 49-Engr, NEC

**NSG 1595 Hampton Institute 4913**  
 Studies of new media for radiation induced lasers  
*Period Obligations*  
 02/01/79-04/30/84 FY85: TOTAL: \$164,143  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Han, K. S. LARC/Jalufka, N. W. 13-Physics  
 LARC/Conway, E. J.

**NAG 1-357 Longwood College 4914**  
 Bithienyl polymers  
*Period Obligations*  
 05/16/83-03/31/86 FY85: TOTAL: \$53,596  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Barber, P. G. LARC/Young, P. R. 12-Chemistry  
 Maxwell, M. H.

**NAG 1-498 Longwood College 4915**  
 Growth of lead tin telluride crystals in gels  
*Period Obligations*  
 07/01/84-05/31/86 FY85: TOTAL: \$12,617  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Barber, P. G. LARC/Fripp, A. L. 12-Chemistry

**NAG 1-524 Norfolk State University 4916**  
 Carbon-13 nuclear magnetic resonance in graphite epoxy  
 composites: The potential for characterizing the fiber-matrix  
 interface  
*Period Obligations*  
 12/01/84-11/30/85 FY85: TOTAL: \$47,842  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Mattix, L. LARC/Winfrey, W. P. 13-Physics  
 LARC/Heyman, J. S.

<b>NAS 1-16921</b>	<b>Norfolk State University</b>	<b>4917</b>
Development of computer aided algebraic systems at Langley Research Center		
<i>Period</i>	<i>Obligations</i>	
01/18/82-11/30/85	FY85: \$29,098	TOTAL: \$76,229
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Deloatch, S. J.	LARC/Shoosmith, J. N.	
		29-Math/Computer.NEC

<b>NAG 1-1</b>	<b>Old Dominion University</b>	<b>4918</b>
Atmospheric sensors: comparisons	In situ and remote sensing technique	
<i>Period</i>	<i>Obligations</i>	
10/25/79-04/15/84	FY85:	TOTAL: \$171,117
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Copeland, G. E.	LARC/Lebel, P. J.	13-Physics
Harward, C. N.	LARC/Bair, C. H.	

<b>NAG 1-121</b>	<b>Old Dominion University</b>	<b>4919</b>
An investigation of the feasibility of active boundary layer thickening for aircraft drag reduction		
<i>Period</i>	<i>Obligations</i>	
11/04/80-11/03/85	FY85: \$22,845	TOTAL: \$149,206
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ash, R. L.	LARC/Walsh, M. J.	41-Aero Engr
	LARC/Hefner, J. N.	

<b>NAG 1-148</b>	<b>Old Dominion University</b>	<b>4920</b>
A theoretical study of photovoltaic convectors growth		
<i>Period</i>	<i>Obligations</i>	
02/01/81-05/15/86	FY85: \$30,798	TOTAL: \$195,372
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Heinbockel, J. H.	LARC/Walker, G. H.	47-Materials Engr
	LARC/Conway, E. J.	

NAG 1-196		Old Dominion University	4921
Low-velocity impact behavior of composites			
<i>Period</i>	<i>Obligations</i>		
09/15/81-12/31/84	FY85:	TOTAL: \$107,692	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Goglia, G. L.	LARC/Illg, W.	47-Materials Engr	
Lal. K. M.	LARC/Davidson, J. R.		

<b>NAG 1-219</b>	<b>Old Dominion University</b>	<b>4922</b>
Toughened composite material micromechanics analysis and impact resistance evaluation		
<i>Period</i>	<i>Obligations</i>	
01/01/82-12/31/84	FY85:	TOTAL: \$152,745
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Goglia, G. L.	LARC/Il/g, W.	19-Phys Sci, NEC
Shivakumar, K. N.	LARC/Poe, C. C., Jr.	

<b>NAG 1-257</b>	<b>Old Dominion University</b>	<b>4923</b>
Fundamental studies of heat load and thermal structural analyses of large space structures		
<i>Period</i>	<i>Obligations</i>	
05/16/82-12/31/83	FY85:	TOTAL: \$45,281
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Thornton, E. A.	LARC/Garrett, R. B.	46-Mech Engr
Dechaumphai, P.	LARC/Wright, R. L.	

<b>NAG 1-297</b>	<b>Old Dominion University</b>	<b>4924</b>
Stability of boundary layer profiles on flat plates and the corner boundary layer problem		
<i>Period</i>	<i>Obligations</i>	
09/01/82-09/30/83	FY85:	TOTAL: \$35,451
<i>Pnn. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lakin, W. D.	LARC/Dagenhart, J. R.	21-Mathematics

<b>NAG 1-301</b>	<b>Old Dominion University</b>	<b>4925</b>
Component mode synthesis and large deflection vibrations of complex structures		
<i>Period</i>	<i>Obligations</i>	
11/01/82-10/31/85	FY85: \$48,580	TOTAL: \$166,561
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mei, C.	LARC/Walz, J. F.	46-Mech Engr
	LARC/Housner, J. M.	

<b>NAG 1-318</b>	<b>Old Dominion University</b>	<b>4926</b>
<b>Control methodologies for large space structures</b>		
<i>Period</i>	<i>Obligations</i>	
<b>12/09/82-09/08/83</b>	<b>FY85:</b>	<b>TOTAL: \$21,166</b>
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McRee, G. J.	LARC/Montgomery, R. C.	42-Astro Engr
	LARC/Williams, J. P.	

<b>NAG 1-334</b>	<b>Old Dominion University</b>	<b>4927</b>
Sidewall boundary layer effects on two-dimensional airfoil testing		
<i>Period</i>	<i>Obligations</i>	
03/01/83-12/31/85	FY85: \$71,036	TOTAL: \$173,421
<i>Pnn. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Goglia, G. L.	LARC/Mineck, R. E.	41-Aero Engr
Annageri, M. V.	LARC/Johnson, C. B.	

<b>NAG 1-336</b>	<b>Old Dominion University</b>	<b>4928</b>
Electrostatic approach to passive damping of slender columns in space structures		
<i>Period</i>	<i>Obligations</i>	
02/01/83-06/30/86	FY85:	TOTAL: \$43,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Razzaq, Z.	LARC/Bush, H. G.	49-Engr, NEC
	LARC/Mikulas, M. M., Jr.	

<b>NAG 1-340</b>	<b>Old Dominion University</b>	<b>4929</b>
Computation of design parameters and visualization of Goertler vortices		
<i>Period</i>	<i>Obligations</i>	
02/16/83-02/15/84	FY85:	TOTAL: \$19,532
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Verma, A. K.	LARC/Dagenhart, J. R.	41-Aero Engr

<b>NAG 1-346</b>	<b>Old Dominion University</b>	<b>4930</b>
Benchmark solutions of the full Navier-Stokes equations for nonequilibrium air flow		
<i>Period</i>	<i>Obligations</i>	
03/05/83-04/04/85	FY85: \$5,347	TOTAL: \$142,247
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Goglia, G. L.	LARC/Zoby, E. V.	41-Aero Engr
Gupta, R. N.		

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**NAG 1-352 Old Dominion University 4931**  
Receptivity of the boundary layer on a blunt body  
*Period Obligations*  
03/16/83-07/31/84 FY85: TOTAL: \$34,435  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Grosch, C. E. LARC/Dagenhart, J. R.  
29-Math/Computer, NEC

**NAG 1-353 Old Dominion University 4932**  
Experimental studies on Taylor-Goertler vortices  
*Period Obligations*  
05/01/83-02/28/85 FY85: TOTAL: \$116,194  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Goglia, G. L. LARC/Dagenhart, J. R. 41-Aero Engr  
Mangalam, S. M.

**NAG 1-363 Old Dominion University 4933**  
Institute for computational and applied mechanics (ICAM)  
*Period Obligations*  
05/16/83-12/31/86 FY85: \$131,100 TOTAL: \$340,233  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Tiwari, S. N. LARC/Massenberg, S. E. 41-Aero Engr  
LARC/Prior, E. J.

**NAG 1-387 Old Dominion University 4934**  
New devices for flow measurement in wind tunnels  
*Period Obligations*  
10/01/83-05/31/86 FY85: \$51,463 TOTAL: \$119,787  
*Prin. Invest. NASA Tech. Officer CASE Category*  
McRae, C. J. LARC/Holmes, H. K. 45-Elec Engr  
LARC/Zuckerwar, A. J.

**NAG 1-423 Old Dominion University 4935**  
Analysis and computation of internal flow field in a scramjet engine  
*Period Obligations*  
10/19/83-10/18/85 FY85: \$24,878 TOTAL: \$46,875  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Tiwari, S. N. LARC/Kumar, A. 41-Aero Engr  
LARC/Dwoyer, D. L.

**NAG 1-429 Old Dominion University 4936**  
Adaptive control of large space structures using recursive lattice filters  
*Period Obligations*  
11/16/83-12/31/85 FY85: \$63,888 TOTAL: \$118,992  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Goglia, G. L. LARC/Montgomery, R. C. 42-Astro Engr  
Sundararajan, N. LARC/Williams, J. P.

**NAG 1-438 Old Dominion University 4937**  
Nonlinear stability analysis of imperfect structures using concurrent processing  
*Period Obligations*  
12/19/83-12/31/85 FY85: \$40,000 TOTAL: \$70,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Razzag, Z. LARC/Bostic, S. W. 46-Mech Engr  
LARC/Stroud, W. J.

**NAG 1-439 Old Dominion University 4938**  
Proposal of a study into the potential uses of automatic programming technology in the production of ultra reliable computing systems  
*Period Obligations*  
01/16/84-08/15/86 FY85: \$114,962 TOTAL: \$160,899  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wild, C. D. LARC/Eckhardt, D. E., Jr.  
22-Computer Science

**NAG 1-451 Old Dominion University 4939**  
Visual information transfer  
*Period Obligations*  
02/15/84-12/31/85 FY85: \$38,000 TOTAL: \$100,400  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Kirby, R. H. LARC/Pope, A. T. 59-Life Sci, NEC  
Comstock, J. R., Jr. LARC/Harris, R. L., Sr.  
Coates, G. D.

**NAG 1-456 Old Dominion University 4940**  
Experimental studies of computerized data reduction techniques for NADIR viewing remote sensors  
*Period Obligations*  
02/15/84-03/31/85 FY85: \$4,194 TOTAL: \$65,874  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Tiwari, S. N. LARC/Wallio, H. A. 39-Env Sci, NEC  
LARC/Hypes, W. D.

**NAG 1-476 Old Dominion University 4941**  
Study of pulsed surface flashover in a vacuum  
*Period Obligations*  
05/16/84-05/15/86 FY85: \$3,000 TOTAL: \$42,939  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Lakdawala, V. K. LARC/Jalufka, N. W. 13-Physics  
LARC/Conway, E. J.

**NAG 1-501 Old Dominion University 4942**  
On the derivation of Russell's method: A variational approach  
*Period Obligations*  
07/16/84-03/31/85 FY85: TOTAL: \$22,846  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hou, J. W. LARC/Woolley, C. T. 42-Astro Engr  
LARC/Barker, L. K.

**NAG 1-528 Old Dominion University 4943**  
Failure analysis of a composite plate under low velocity impact  
*Period Obligations*  
10/15/84-10/14/85 FY85: \$18,460 TOTAL: \$18,460  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Prabhakaran, R. LARC/Elber, W. 47-Materials Engr  
LARC/Crews, J. H., Jr.

**NAG 1-529 Old Dominion University 4944**  
Three-dimensional finite-element analysis of fatigue crack propagation  
*Period Obligations*  
11/01/84-10/31/85 FY85: \$15,803 TOTAL: \$15,803  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Goglia, G. L. LARC/Newman, J. C., Jr. 46-Mech Engr  
LARC/Elber, W.

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**NAG 1-530** **Old Dominion University** **4945**  
Investigation of the stability of large vortices  
*Period* *Obligations*  
11/01/84-10/31/85 FY85: \$40,646 TOTAL: \$40,646  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ash, R. L. LARC/Anders, J. B. 41-Aero Engr

**NAG 1-559** **Old Dominion University** **4946**  
Supersonic aerodynamic interference effects of store separation from cavities-a computa. approach  
*Period* *Obligations*  
05/16/85-05/15/86 FY85: \$31,092 TOTAL: \$31,092  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Baysal, O. LARC/Sawyer, W. C. 19-Phys Sci, NEC  
LARC/Stallings, R. L.

**NAG 1-561** **Old Dominion University** **4947**  
Optimal cure cycle design for autoclave processing of thick composites laminates-a feasibility study  
*Period* *Obligations*  
01/15/85-01/14/86 FY85: \$20,000 TOTAL: \$20,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hou, J. W. LARC/Baucom, R. M. 12-Chemistry  
LARC/Freeman, W. T.

**NAG 1-569** **Old Dominion University** **4948**  
Chemoviscosity modeling of thermosetting resins  
*Period* *Obligations*  
02/01/85-01/31/86 FY85: \$12,073 TOTAL: \$12,073  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Tiwari, S. N. LARC/Baucom, R. M. 12-Chemistry  
LARC/Freeman, W. T.

**NAG 1-576** **Old Dominion University** **4949**  
Stability of the corner boundary layer problem  
*Period* *Obligations*  
04/01/85-03/31/86 FY85: \$22,009 TOTAL: \$22,009  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Lakin, W. D. LARC/Dagenhart, J. R. 41-Aero Engr

**NAG 1-591** **Old Dominion University** **4950**  
Computational technique for compressible vortex flows integral equation approach  
*Period* *Obligations*  
05/16/85-05/15/86 FY85: \$47,995 TOTAL: \$47,995  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kandil, O. A. LARC/Yates, E. C. 41-Aero Engr

**NAG 1-596** **Old Dominion University** **4951**  
Computational solution of chemistry problems  
*Period* *Obligations*  
10/01/85-09/30/86 FY85: \$75,254 TOTAL: \$75,254  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ake, R. L. LARC/Phillips, D. H. 12-Chemistry  
Jafri, J. A.

**NAG 1-611** **Old Dominion University** **4952**  
Measurement of dielectric parameters in the millimeter frequency region  
*Period* *Obligations*  
08/01/85-12/31/85 FY85: \$14,387 TOTAL: \$14,387  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Zaman, A. J. LARC/Gilreath, M. C. 46-Mech Engr

**NAS 1-16537** **Old Dominion University** **4953**  
Editorial analysis and review services  
*Period* *Obligations*  
02/16/81-11/15/85 FY85: TOTAL: \$27,813  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Stohrer, F. F. LARC/Huffman, J. P. 99-Multi-Discip

**NAS 1-17099** **Old Dominion University** **4954**  
Research in aerodynamics and related fields  
*Period* *Obligations*  
08/05/82-08/04/85 FY85: \$75,412 TOTAL: \$607,562  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Unavailable LARC/Prior, E. J. 41-Aero Engr

**NAS 1-17993** **Old Dominion University** **4955**  
Research in aerodynamics and related fields  
*Period* *Obligations*  
03/05/85-03/04/88 FY85: \$310,215 TOTAL: \$310,215  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Unavailable LARC/Prior, E. J. 41-Aero Engr

**NCC 1-28** **Old Dominion University** **4956**  
Application of advanced lidar techniques for atmospheric remote sensing  
*Period* *Obligations*  
12/15/79-12/31/85 FY85: \$120,914 TOTAL: \$526,473  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kindle, E. C. LARC/Browell, E. V. 31-Atmos Sci  
Butler, C. LARC/Carter, A. F.

**NCC 1-32** **Old Dominion University** **4957**  
Multicolor lidar system research  
*Period* *Obligations*  
12/15/79-12/31/84 FY85: TOTAL: \$344,549  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Copeland, G. E. LARC/Browell, E. V. 13-Physics  
Allen, R. J. LARC/Carter, A. F.

**NCC 1-34** **Old Dominion University** **4958**  
Development of data processing  
*Period* *Obligations*  
01/22/80-01/15/86 FY85: \$176,714 TOTAL: \$867,262  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kindle, E. C. LARC/Hypes, W. D. 39-Env Sci, NEC  
Casas, J. C.

**NCC 1-42** **Old Dominion University** **4959**  
A study of physical processes for space-radiation protection  
*Period* *Obligations*  
06/04/80-05/15/86 FY85: \$81,996 TOTAL: \$343,671  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Khandelwal, G. S. LARC/Townsend, L. W. 13-Physics  
LARC/Conway, E. J.

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<b>NCC 1-60</b>			
<b>Old Dominion University</b>		<b>4960</b>	
Aerothermal structural concepts study			
<i>Period</i>	<i>Obligations</i>		
12/08/81-12/07/84	FY85:	TOTAL: \$47,044	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Prabhakaran, R.	LARC/Davis, R. C.	41-Aero Engr	
	LARC/Cooper, P. A.		
<b>NCC 1-65</b>			
<b>Old Dominion University</b>		<b>4961</b>	
Wing-propellor interference studies			
<i>Period</i>	<i>Obligations</i>		
02/02/82-12/31/84	FY85:	TOTAL: \$78,419	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Tiwari, S. N.	LARC/Liu, C. H.	41-Aero Engr	
Prabhu, R. K.	LARC/Greene, G. C.		
Wong, T. C.			
<b>NCC 1-68</b>			
<b>Old Dominion University</b>		<b>4962</b>	
Numerical solutions of three-dimensional Navier-Stokes equations for closed-bluff bodies			
<i>Period</i>	<i>Obligations</i>		
06/01/82-12/31/85	FY85: \$30,210	TOTAL: \$87,440	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Tiwari, S. N.	LARC/Smith, R. E., Jr.	41-Aero Engr	
	LARC/Shoosmith, J. N.		
<b>NCC 1-74</b>			
<b>Old Dominion University</b>		<b>4963</b>	
User interface for integrated computer-aided design systems			
<i>Period</i>	<i>Obligations</i>		
01/01/83-05/31/85	FY85:	TOTAL: \$78,147	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Schwing, J. L.	LARC/Wilhite, A. W.	22-Computer Science	
	LARC/Rehder, J. J.		
<b>NCC 1-90</b>			
<b>Old Dominion University</b>		<b>4964</b>	
Studies of molecular properties of polymeric materials			
<i>Period</i>	<i>Obligations</i>		
11/01/84-10/31/85	FY85: \$26,783	TOTAL: \$26,783	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Harries, W. L.	LARC/Long, S. T.	13-Physics	
Ries, H. R.	LARC/Long, E. R.		
<b>NCC 1-94</b>			
<b>Old Dominion University</b>		<b>4965</b>	
Space flight and experiment studies			
<i>Period</i>	<i>Obligations</i>		
03/01/85-02/28/86	FY85: \$264,956	TOTAL: \$264,956	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Brock, F. J.	LARC/Melfi, L. T., Jr.	13-Physics	
Hueser, J. E.	LARC/Jones, J. J.		
<b>NCC 1-96</b>			
<b>Old Dominion University</b>		<b>4966</b>	
Support of validation of stratospheric aerosol and gas experiment (SAGE) II data			
<i>Period</i>	<i>Obligations</i>		
04/01/85-03/31/86	FY85: \$60,133	TOTAL: \$60,133	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Copeland, G. E.	LARC/McMaster, L. R.	31-Atmos Sci	
	LARC/McCormick, M. P.		
<b>NCC 1-99</b>			
<b>Old Dominion University</b>		<b>4967</b>	
Geometric modeling for computer aided design			
<i>Period</i>	<i>Obligations</i>		
06/16/85-06/15/86	FY85: \$57,682	TOTAL: \$57,682	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Schwing, J. L.	LARC/Wilhite, A. W.	22-Computer Science	
	LARC/Rehder, J. J.		
<b>NGR 47-003-052</b>			
<b>Old Dominion University</b>		<b>4968</b>	
NASA graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
05/12/71-08/31/86	FY85:	TOTAL: \$838,922	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Roberts, A. S., Jr.	LARC/Massenberg, S. E.	41-Aero Engr	
	LARC/Massenberg, S. E.		
<b>NGT 47-003-029</b>			
<b>Old Dominion University</b>		<b>4969</b>	
Summer faculty fellowship program in research			
<i>Period</i>	<i>Obligations</i>		
11/14/69-03/31/86	FY85: \$390,400	TOTAL: \$2,035,828	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Goglia, G. L.	HQ-LB/Owens, F. C.	49-Engr, NEC	
<b>NGT 47-003-802</b>			
<b>Old Dominion University</b>		<b>4970</b>	
NASA graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
08/16/83-08/15/85	FY85:	TOTAL: \$25,696	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Smith, P. W.	HQ-LB/Owens, F. C.	21-Mathematics	
<b>NGT 47-003-803</b>			
<b>Old Dominion University</b>		<b>4971</b>	
NASA graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
05/16/85-05/15/86	FY85: \$15,215	TOTAL: \$15,215	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Khandelwal, G. S.	HQ-LE/Owens, F. C.	13-Physics	
<b>NSG 1177</b>			
<b>Old Dominion University</b>		<b>4972</b>	
Experimental and analytical studies in fluidics			
<i>Period</i>	<i>Obligations</i>		
05/01/75-08/31/84	FY85:	TOTAL: \$122,953	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Goglia, G. L.	LARC/Hellbaum, R. F.	45-Elec Engr	
	LARC/Garner, H. D.		
<b>NSG 1271</b>			
<b>Old Dominion University</b>		<b>4973</b>	
Space Shuttle experiments studies			
<i>Period</i>	<i>Obligations</i>		
03/01/76-02/28/85	FY85:	TOTAL: \$1,549,407	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Brock, F. J.	LARC/Melfi, L. T., Jr.	13-Physics	
Hueser, J. E.	LARC/Jones, J. J.		
<b>NSG 1321</b>			
<b>Old Dominion University</b>		<b>4974</b>	
Concepts for structurally compatible thermal finite elements			
<i>Period</i>	<i>Obligations</i>		
09/01/76-12/31/85	FY85: \$130,571	TOTAL: \$592,845	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Thornton, E. A.	LARC/Wieting, A. R.	49-Engr, NEC	

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NSG 1393** **Old Dominion University** **4975**  
Computational solution of atmospheric chemistry problems  
*Period* *Obligations*  
06/01/77-12/31/85 FY85: TOTAL: \$327,539  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ake, R. L. LARC/Phillips, D. H. 12-Chemistry  
Jafri, J. A. LARC/Rogowski, R. S.

**NSG 1560** **Old Dominion University** **4976**  
Development of a nonlinear vortex method  
*Period* *Obligations*  
09/01/78-09/30/83 FY85: TOTAL: \$152,818  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kandil, O. A. LARC/Yates, E. C., Jr. 41-Aero Engr

**NSG 1561** **Old Dominion University** **4977**  
Investigation of aerodynamic characteristics of wings having vortex flow using different numerical codes  
*Period* *Obligations*  
09/01/78-03/31/84 FY85: TOTAL: \$131,224  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Chaturvedi, S. K. LARC/Luckring, J. M. 41-Aero Engr  
LARC/Campbell, J. F.

**NSG 1568** **Old Dominion University** **4978**  
Theoretical study of solar pumped lasers  
*Period* *Obligations*  
12/15/78-10/31/85 FY85: \$48,854 TOTAL: \$235,072  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Harries, W. L. LARC/Wilson, J. W. 13-Physics  
LARC/Conway, E. J.

**NSG 1650** **Old Dominion University** **4979**  
Design of multi-variable feedback control systems via spectral assignment  
*Period* *Obligations*  
09/01/79-04/15/84 FY85: TOTAL: \$169,249  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Mielke, R. R. LARC/Jones, R. L. 41-Aero Engr  
Tung, L. J. LARC/Oehman, W. I.

**NSG 5289** **Old Dominion University** **4980**  
Radiation effects studies for the high resolution spectrograph  
*Period* *Obligations*  
07/10/78-11/30/85 FY85: TOTAL: \$176,796  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Becher, J. GSFC/Fowler, W. B. 13-Physics  
Kernell, R. L.

**NAG 1-46** **University of Virginia** **4981**  
Numerical algorithms for finite element computations on arrays of microprocessors  
*Period* *Obligations*  
03/01/80-11/30/86 FY85: \$115,000 TOTAL: \$262,226  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ortega, J. M. LARC/Storaasli, O. O. 49-Engr, NEC  
LARC/Stroud, W. J.

**NAG 1-177** **University of Virginia** **4982**  
Investigations of semiconductor clad optical waveguides  
*Period* *Obligations*  
05/01/81-07/31/84 FY85: TOTAL: \$102,869  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Batchman, T. E. LARC/Magee, C. J., Jr. 45-Elec Engr  
LARC/Segura, R.

**NAG 1-242** **University of Virginia** **4983**  
Research in computer science  
*Period* *Obligations*  
12/01/81-11/30/85 FY85: \$100,000 TOTAL: \$380,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Ortega, J. M. LARC/Shoosmith, J. N. 22-Computer Science  
LARC/Fulton, R. E.

**NAG 1-260** **University of Virginia** **4984**  
Implementation and use of ADA on distributed systems with high reliability requirements  
*Period* *Obligations*  
03/05/82-12/31/85 FY85: \$53,519 TOTAL: \$216,391  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Knight, J. C. LARC/Senn, E. H. 22-Computer Science  
LARC/Voigt, S. J.

**NAG 1-262** **University of Virginia** **4985**  
Investigation of the quantum efficiency of optical heterodyne detectors  
*Period* *Obligations*  
03/15/82-07/31/84 FY85: TOTAL: \$54,641  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Batchman, T. E. LARC/Jobson, D. J. 45-Elec Engr  
LARC/Katzberg, S. J.

**NAG 1-349** **University of Virginia** **4986**  
Digital control system for space structure dampers  
*Period* *Obligations*  
03/03/83-07/31/85 FY85: TOTAL: \$59,974  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Haviland, J. K. LARC/Horner, G. C. 46-Mech Engr  
LARC/Montgomery, R. C.

**NAG 1-350** **University of Virginia** **4987**  
Stress effects in multilayers  
*Period* *Obligations*  
06/01/83-06/30/86 FY85: \$57,897 TOTAL: \$145,016  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Jesser, W. A. ARC/Fripp, A. L. 47-Materials Engr  
LARC/Debnam, W. J.

**NAG 1-371** **University of Virginia** **4988**  
Parametric studies of the epitaxial growth of metals and semiconductors on ionic substrates  
*Period* *Obligations*  
06/01/83-09/30/84 FY85: TOTAL: \$15,000  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Jesser, W. A. LARC/Outlaw, R. A. 47-Materials Engr  
LARC/Conway, E. J.

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NAG 1-373**                      **University of Virginia**                      **4989**  
Flowfield measurements in a model scramjet combustor using  
laser-induced iodine fluorescence  
*Period*                                      *Obligations*  
07/01/83-06/30/86                      FY85: \$58,576                      TOTAL: \$155,421  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
McDaniel, J. C.                      LARC/Northam, G. B.                      41-Aero Engr  
LARC/Exton, R.

**NAG 3-316**                      **University of Virginia**                      **4996**  
Gigabit per second digital communications: Theory in practice  
*Period*                                      *Obligations*  
08/15/82-12/31/84                      FY85:                      TOTAL: \$78,799  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Wilson, S. G.                      LERC/Connolly, D. J.                      45-Elec Engr  
Oliver, J. D., Jr.

**NAG 1-419**                      **University of Virginia**                      **4990**  
Study of applicability of nucleation theory to quasi-thermodynamic  
transformations of second and higher ehrenfest-order  
*Period*                                      *Obligations*  
12/15/83-01/14/86                      FY85: \$39,831                      TOTAL: \$64,831  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Barker, R. E., Jr.                      LARC/Wakelyn, N. T.                      13-Physics

**NAG 3-540**                      **University of Virginia**                      **4997**  
Real-time communications for control systems  
*Period*                                      *Obligations*  
03/28/84-06/14/86                      FY85: \$45,000                      TOTAL: \$113,993  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Weaver, A. C.                      LERC/Soeder, J. F.                      49-Engr, NEC

**NAG 1-467**                      **University of Virginia**                      **4991**  
Methods for design and evaluation of integrated hardware/  
software systems for concurrent computation  
*Period*                                      *Obligations*  
03/15/84-03/14/86                      FY85: \$70,364                      TOTAL: \$138,209  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Pratt, T. W.                      LARC/Stroud, W. J.                      22-Computer Science  
LARC/Bostic, S. W.

**NAG 3-630**                      **University of Virginia**                      **4998**  
Computer communication networks for hierarchical control  
*Period*                                      *Obligations*  
04/01/85-05/01/86                      FY85: \$60,000                      TOTAL: \$60,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Weaver, A. C.                      LERC/Delaat, J. C.                      22-Computer Science  
LERC/Lorenzo, C. F.

**NAG 1-511**                      **University of Virginia**                      **4992**  
A second generation experiment in Fault tolerant software  
*Period*                                      *Obligations*  
09/01/84-12/31/85                      FY85: \$31,610                      TOTAL: \$111,610  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Knight, J. C.                      LARC/Eckhardt, D. E., Jr.                      22-Computer Science

**NAG 5-256**                      **University of Virginia**                      **4999**  
Nonthermal ultraviolet radiation in nearly compact radio sources  
*Period*                                      *Obligations*  
08/01/82-03/31/85                      FY85:                      TOTAL: \$3,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
O'connell, R. W.                      GSFC/Kondo, Y.                      11-Astronomy  
Puschell, J. L.  
Thuan, T. X.

**NAG 1-605**                      **University of Virginia**                      **4993**  
Detection of faults and software reliability analysis  
*Period*                                      *Obligations*  
07/01/85-06/30/86                      FY85: \$29,944                      TOTAL: \$29,944  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Knight, J. C.                      LARC/Migneault, G. E.                      22-Computer Science

**NAG 5-257**                      **University of Virginia**                      **5000**  
Ultraviolet studies of strong nuclear radio sources in normal  
spiral galaxies  
*Period*                                      *Obligations*  
09/01/82-09/30/86                      FY85: \$9,800                      TOTAL: \$21,600  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Thuan, T. X.                      GSFC/Kondo, Y.                      11-Astronomy

**NAG 1-614**                      **University of Virginia**                      **4994**  
Development of improved models for interrelations between  
upper-atmospheric gas species and orbital- velocity vehicle  
surfaces  
*Period*                                      *Obligations*  
08/15/85-08/14/86                      FY85: \$15,000                      TOTAL: \$15,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Fisher, S. S.                      LARC/Moss, J. N.                      41-Aero Engr

**NAG 5-297**                      **University of Virginia**                      **5001**  
Investigation of satellite measurements in the presence of  
clouds  
*Period*                                      *Obligations*  
02/15/83-08/14/84                      FY85:                      TOTAL: \$88,071  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Warner, C.                      GSFC/Halem, M.                      31-Atmos Sci

**NAG 3-180**                      **University of Virginia**                      **4995**  
Aerodynamic cross-coupling forces on centrifugal tur-  
bomachinery  
*Period*                                      *Obligations*  
04/25/81-10/30/84                      FY85:                      TOTAL: \$189,428  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Allaire, P. E.                      LERC/Kascak, A. F.                      46-Mech Engr  
Sexton, M. R.                      LERC/Fleming, D. P.  
Barrett, L. E.

**NAG 5-582**                      **University of Virginia**                      **5002**  
Research relative to giant spectra for stellar population models  
*Period*                                      *Obligations*  
07/15/85-07/14/86                      FY85: \$5,122                      TOTAL: \$5,122  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
O'connell, R. W.                      GSFC/Kondo, Y.                      11-Astronomy  
Burstein, D.  
Wu, C. C.



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VIRGINIA (Continued)**

**NAG 5-597**                      **University of Virginia**                      **5003**  
Visual monitoring of autonomous life sciences experimentation  
*Period*                                      *Obligations*  
08/01/85-07/31/86                      FY85: \$24,977                      TOTAL: \$24,977  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Martin, W. N.                      GSFC/Hartenstein, R. G.                      22-Computer Science  
GSFC/Lockyear, B. L.

**NAG 5-700**                      **University of Virginia**                      **5004**  
Ultraviolet imaging telescope astronomical observations  
*Period*                                      *Obligations*  
09/01/85-01/31/86                      FY85: \$45,000                      TOTAL: \$45,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
O'Connell, R. W.                      GSFC/Steher, T. P.                      11-Astronomy  
GSFC/Baker, G. R.

**NAG 5-712**                      **University of Virginia**                      **5005**  
Wiskerless diode research  
*Period*                                      *Obligations*  
10/01/85-09/30/86                      FY85: \$9,302                      TOTAL: \$9,302  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Mattauch, R. J.                      GSFC/Ewin, A. J.                      45-Elec Engr

**NAG 8-375**                      **University of Virginia**                      **5006**  
Observe time in quest investigative program or X-ray observations  
of two remarkable group of quasars and X-ray observations of  
selected area 57 and X-ray observations of blue compact  
galaxies  
*Period*                                      *Obligations*  
09/21/80-03/31/84                      FY85:                      TOTAL: \$9,441  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Thuan, T. X.                      MSFC/Stone, J. F.                      11-Astronomy

**NAGW 186**                      **University of Virginia**                      **5007**  
Sputtering effects on the Jovian satellites and rings  
*Period*                                      *Obligations*  
04/15/81-05/31/86                      FY85: \$43,949                      TOTAL: \$190,938  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Johnson, R. E.                      HQ-EL/Scott, D. H.                      32-Geological Sci  
HQ-EL/Boyce, J. M.

**NAGW 461**                      **University of Virginia**                      **5008**  
Ion collisions of importance in the lo plasma tours  
*Period*                                      *Obligations*  
09/01/83-09/30/86                      FY85:                      TOTAL: \$42,778  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Johnson, R. E.                      HQ-EL/Brinton, H. C.                      31-Atmos Sci  
HQ-EL/Quaide, W. L.

**NAGW 764**                      **University of Virginia**                      **5009**  
Emission processes and dynamics of hot gases in astrophysics  
*Period*                                      *Obligations*  
07/01/85-02/28/86                      FY85: \$130,416                      TOTAL: \$130,416  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Chevalier, R. A.                      HQ-EZ/Stencel, R. E.                      13-Physics  
HQ-EZ/Weiler, E. J.

**NAS 1-16286**                      **University of Virginia**                      **5010**  
Air transportation systems research  
*Period*                                      *Obligations*  
11/13/80-05/19/86                      FY85:                      TOTAL: \$44,960  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Kugitman, A. R.                      LARC/Taylor, R. T.                      41-Aero Engr  
Jacobson, I.                      LARC/Driver, C.

**NAS 1-16550**                      **University of Virginia**                      **5011**  
Interplanetary dust experiment  
*Period*                                      *Obligations*  
01/07/81-07/06/87                      FY85:                      TOTAL: \$138,057  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Singer, S. F.                      LARC/Jones, J. L.                      31-Atmos Sci  
Stanley, J. E.

**NAS 1-17671**                      **University of Virginia**                      **5012**  
Services and materials in support of the NASA global tropo-  
spheric experiment GTE Atlantic boundary layer experiment able  
*Period*                                      *Obligations*  
04/03/84-07/01/85                      FY85: \$10,862                      TOTAL: \$16,652  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Garstang, M.                      LARC/Shipley, S. T.                      31-Atmos Sci  
LARC/Harriss, R. C.

**NAS 5-24218**                      **University of Virginia**                      **5013**  
Research study on mixer diodes for submillimeter applications  
*Period*                                      *Obligations*  
06/23/77-10/31/85                      FY85: \$6,799                      TOTAL: \$243,067  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Mattauch, R. J.                      GSFC/Lamb, G. M.                      49-Engr, NEC

**NAS 5-26110**                      **University of Virginia**                      **5014**  
Spacelab/ultraviolet imaging telescope astronomical in-  
vestigations  
*Period*                                      *Obligations*  
06/01/82-09/30/85                      FY85:                      TOTAL: \$70,968  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
O'connell, R. W.                      GSFC/Steher, T. P.                      11-Astronomy

**NAS 5-26466**                      **University of Virginia**                      **5015**  
Development of superconducting tunnel junctions for millimeter-  
wave receivers  
*Period*                                      *Obligations*  
03/20/81-05/31/85                      FY85:                      TOTAL: \$197,314  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Mattauch, R. J.                      GSFC/Jones, R. L.                      45-Elec Engr

**NAS 5-28613**                      **University of Virginia**                      **5016**  
Provide Starlab meeting support  
*Period*                                      *Obligations*  
11/16/84-10/31/87                      FY85: \$44,571                      TOTAL: \$44,571  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
O'connell, R. W.                      GSFC/Cyphers, H.                      19-Phys Sci, NEC

**NCC 1-95**                      **University of Virginia**                      **5017**  
Atmospheric surface and boundary layers of the Amazon basin  
*Period*                                      *Obligations*  
03/15/85-03/14/86                      FY85: \$50,801                      TOTAL: \$50,801  
*Prin. Invest.*                                      *NASA Tech. Officer*                      *CASE Category*  
Garstang, M.                      LARC/Shipley, S. T.                      31-Atmos Sci

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NGT 47-005-800 University of Virginia 5018**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/82-05/31/85 FY85: TOTAL: \$43,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Pilkey, W. D. HQ-LB/Owens, F. C. 41-Aero Engr

**NGT 47-005-801 University of Virginia 5019**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/82-05/31/84 FY85: TOTAL: \$26,400  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Lilleht, L. U. HQ-LB/Owens, F. C. 43-Chem Engr

**NGT 47-005-802 University of Virginia 5020**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/84-08/31/86 FY85: \$36,000 TOTAL: \$51,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Fisher, S. S. HQ-LE/Owens, F. C. 43-Chem Engr

**NGT 47-005-804 University of Virginia 5021**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/85-05/31/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Matthews, G. B. HQ-LE/Owens, F. C. 41-Aero Engr

**NSG 7572 University of Virginia 5022**  
 Study of layered deposits and paleoclimates on Mars  
*Period Obligations*  
 04/01/79-01/31/86 FY85: \$29,339 TOTAL: \$174,148  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Howard, A. D. HQ-EL/Boyce, J. M. 32-Geological Sci  
 HQ-EL/Holt, H. E.

**NAG 1-239 Virginia Commonwealth University 5023**  
 Synthesis of thermally stable polypyrazoles, polyprimidines, and other heteroaromatic polymers  
*Period Obligations*  
 12/01/81-08/15/86 FY85: \$63,469 TOTAL: \$174,415  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Bass, R. G. LARC/Hergenrother, P. M. 12-Chemistry  
 LARC/Johnston, N. J.

**NAG 1-241 Virginia Commonwealth University 5024**  
 Development of acoustic test apparatus for evaluation of the state of the human airways  
*Period Obligations*  
 12/01/81-12/31/85 FY85: TOTAL: \$48,153  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Patterson, J. L. LARC/Hardin, J. C. 56-Medical Sciences  
 LARC/Seiner, J. M.

**NAG 1-435 Virginia Commonwealth University 5025**  
 Synthesis and characterization of polymers containing lanthanides  
*Period Obligations*  
 01/01/84-12/31/85 FY85: \$54,219 TOTAL: \$94,893  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Shillady, D. D. LARC/Stoakley, D. M. 12-Chemistry  
 Vallarino, L. M. LARC/St. Clair, A. K.

**NAG 1-458 Virginia Commonwealth University 5026**  
 Utilization of lasers for polymer initiation of charge transfer complexes  
*Period Obligations*  
 03/15/84-03/14/86 FY85: \$40,000 TOTAL: \$50,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Ottenbrite, R. M. LARC/Conway, E. J. 12-Chemistry  
 LARC/Walker, G. H.

**NAG 1-594 Virginia Commonwealth University 5027**  
 Preparation of neodymium (iii) liquid lasers  
*Period Obligations*  
 06/01/85-05/31/86 FY85: \$49,553 TOTAL: \$49,553  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Vallarino, L. M. LARC/Conway, E. J. 12-Chemistry  
 LARC/De Young, R. J.

**NAS 9-16046 Virginia Commonwealth University 5028**  
 Influence of weightlessness upon automatic cardiovascular control  
*Period Obligations*  
 01/17/80-10/31/86 FY85: \$265,169 TOTAL: \$1,792,861  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Exkberg, D. L. JSC/Young, W. J. 59-Life Sci, NEC

**NCC 1-87 Virginia Commonwealth University 5029**  
 Application of ultrasonic techniques in patients suffering trauma  
*Period Obligations*  
 09/01/84-08/31/86 FY85: TOTAL: \$90,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Marmarou, A. LARC/Yost, W. T. 56-Medical Sciences  
 LARC/Cantrell, J. H., Jr.

**NGT 47-002-800 Virginia Commonwealth University 5030**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/84-05/31/86 FY85: \$13,920 TOTAL: \$27,540  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Ottenbrite, R. M. HQ-LB/Owens, F. C. 41-Aero Engr

**NAG 9-102 Virginia Military Institute 5031**  
 Redox processes in synthetic lunar magmas  
*Period Obligations*  
 05/01/85-04/30/86 FY85: \$16,000 TOTAL: \$16,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Schreider, H. D. JSC/Browne, I. D. 19-Phys Sci, NEC

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NSG 7355** **Virginia Military Institute** **5032**  
Oxidation-reduction processes in synthetic silicate melts  
*Period* *Obligations*  
06/01/77-12/31/84 FY85: TOTAL: \$134,272  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Schreiber, H. D. HQ-EL/Boyce, J. M. 32-Geological Sci  
HQ-EL/Holt, H. E.

**NAG 1-145** **Va Polytechnic Inst & St Univ** **5033**  
Development and application of optimum sensitivity analysis of structures  
*Period* *Obligations*  
01/08/81-12/31/85 FY85: \$93,521 TOTAL: \$244,456  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Hallauer, W. L. LARC/Sobieski, J. E. 41-Aero Engr  
Barthelemy, J. M.

**NAG 1-168** **Va Polytechnic Inst & St Univ** **5034**  
Structural optimization for improved damage tolerance  
*Period* *Obligations*  
09/01/81-10/15/85 FY85: \$53,453 TOTAL: \$213,432  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Haftka, R. T. LARC/Starnes, J. H., Jr. 41-Aero Engr

**NAG 1-201** **Va Polytechnic Inst & St Univ** **5035**  
Compression strength failure mechanisms in unidirectional composite laminates containing a hole  
*Period* *Obligations*  
06/15/81-01/31/86 FY85: TOTAL: \$29,902  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Johnson, E. R. LARC/Starnes, J. H., Jr. 41-Aero Engr

**NAG 1-203** **Va Polytechnic Inst & St Univ** **5036**  
Flight optimization for high performance vehicles  
*Period* *Obligations*  
07/01/81-09/30/85 FY85: \$17,175 TOTAL: \$225,278  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Kelley, H. J. LARC/Gracey, C. 41-Aero Engr  
Cliff, E. M. LARC/Price, D. B.

**NAG 1-224** **Va Polytechnic Inst & St Univ** **5037**  
Automated sizing of aerospace structures under multiple constraints  
*Period* *Obligations*  
11/01/81-10/31/85 FY85: \$75,354 TOTAL: \$268,923  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Haftka, R. T. LARC/Adelman, H. M. 41-Aero Engr  
Hallauer, W. L.

**NAG 1-225** **Va Polytechnic Inst & St Univ** **5038**  
Identification and control of structures in space  
*Period* *Obligations*  
11/01/81-12/31/85 FY85: \$50,598 TOTAL: \$156,794  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Meirovitch, L. LARC/Williams, J. P. 42-Astro Engr  
Barah, H. LARC/Montgomery, R. C.

**NAG 1-227** **Va Polytechnic Inst & St Univ** **5039**  
Deformation of adhesive joints  
*Period* *Obligations*  
11/01/81-03/31/85 FY85: \$16,000 TOTAL: \$105,997  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Post, D. LARC/Johnson, W. S. 46-Mech Engr  
LARC/Everett, R. A., Jr.

**NAG 1-280** **Va Polytechnic Inst & St Univ** **5040**  
Three-dimensional interactions of disturbances in boundary layers  
*Period* *Obligations*  
06/01/82-09/15/84 FY85: TOTAL: \$170,997  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Saric, W. S. LARC/Maddalon, D. V. 41-Aero Engr  
LARC/Wagner, R. D.

**NAG 1-299** **Va Polytechnic Inst & St Univ** **5041**  
An analysis of wave interactions in swept-wing flows  
*Period* *Obligations*  
10/07/82-01/31/84 FY85: TOTAL: \$61,427  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Saric, W. S. LARC/Maddalon, D. V. 41-Aero Engr  
LARC/Wagner, R. D.

**NAG 1-300** **Va Polytechnic Inst & St Univ** **5042**  
Fundamental approach to the sticking of insect residues to aircraft wings  
*Period* *Obligations*  
12/16/82-09/30/85 FY85: \$14,484 TOTAL: \$95,704  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Eiss, N. S., Jr. LARC/Somers, D. M. 49-Engr, NEC  
Wightman, J. P. LARC/Johnston, N. J.

**NAG 1-337** **Va Polytechnic Inst & St Univ** **5043**  
A new approach to the computation of supersonic rotational flows  
*Period* *Obligations*  
02/01/83-09/30/85 FY85: \$16,716 TOTAL: \$109,208  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Grossman, B. LARC/Bradley, P. F. 41-Aero Engr  
LARC/Dwoyer, D. L.

**NAG 1-343** **Va Polytechnic Inst & St Univ** **5044**  
NASA materials science and engineering program  
*Period* *Obligations*  
03/01/83-06/15/86 FY85: \$990,179 TOTAL: \$2,661,562  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Torgersen, P. E. LARC/Tenney, D. R. 47-Materials Engr  
LARC/Teichman, L. A.

**NAG 1-359** **Va Polytechnic Inst & St Univ** **5045**  
Deformation measurements of composite multi-span beam rear specimens by moire interferometry  
*Period* *Obligations*  
05/01/83-06/30/84 FY85: TOTAL: \$15,009  
*Prin. Invest.* *NASA Tech. Officer* *CASE Category*  
Post, D. LARC/Williams, J. G. 41-Aero Engr  
Herakovich, C. T. LARC/Starnes, J. H., Jr.

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NAG 1-369**      **Va Polytechnic Inst & St Univ**      **5046**  
 Piezoelectric array and optical fiber transducers for applications in nondestructive evaluation

<i>Period</i>	<i>Obligations</i>	
10/01/83-12/15/84	FY85: TOTAL: \$39,819	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Claus, R. O.	LARC/Cantrell, J. H., Jr.	45-Elec Engr
	LARC/Heyman, J. S.	

**NAG 1-482**      **Va Polytechnic Inst & St Univ**      **5053**  
 Time domain optical fiber instrumentation for the sensing of localized strain in materials

<i>Period</i>	<i>Obligations</i>	
10/01/84-09/30/85	FY85: TOTAL: \$39,812	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Claus, R. O.	LARC/Cantrell, J. H., Jr.	45-Elec Engr
	LARC/Heyman, J. S.	

**NAG 1-389**      **Va Polytechnic Inst & St Univ**      **5047**  
 Composite laminate free edge reinforcement concepts

<i>Period</i>	<i>Obligations</i>	
09/15/83-08/31/85	FY85: TOTAL: \$51,449	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Jones, R. M.	LARC/Shuart, M. J.	41-Aero Engr

**NAG 1-486**      **Va Polytechnic Inst & St Univ**      **5054**  
 Experimental and analytical investigation of fan flow interaction with downstream struts

<i>Period</i>	<i>Obligations</i>	
06/16/84-09/15/86	FY85: \$20,000 TOTAL: \$40,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wing-fai Ng	LARC/Schoenster, J. A.	41-Aero Engr
O'brien, W. F.		

**NAG 1-390**      **Va Polytechnic Inst & St Univ**      **5048**  
 An analytical investigation of synchrophasing as a means of aircraft interior noise control

<i>Period</i>	<i>Obligations</i>	
09/15/83-09/14/86	FY85: \$130,824 TOTAL: \$254,389	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fuller, C. R.	LARC/Silcox, R. J.	41-Aero Engr
	LARC/Lester, H. C.	

**NAG 1-491**      **Va Polytechnic Inst & St Univ**      **5055**  
 Human factors studies of control configurations for advanced transport aircraft

<i>Period</i>	<i>Obligations</i>	
07/01/84-09/30/85	FY85: TOTAL: \$25,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Synder, H. L.	LARC/Parrish, R. V.	41-Aero Engr
	LARC/Busquets, A. M.	

**NAG 1-393**      **Va Polytechnic Inst & St Univ**      **5049**  
 New horizons in science briefings

<i>Period</i>	<i>Obligations</i>	
08/01/83-11/30/83	FY85: TOTAL: \$5,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nystrom, L. A.	LARC/Massenberg, S. E.	41-Aero Engr

**NAG 1-493**      **Va Polytechnic Inst & St Univ**      **5056**  
 Synthesis of turboprop acoustic source functions for use in aircraft cabin noise studies

<i>Period</i>	<i>Obligations</i>	
06/16/84-08/10/84	FY85: TOTAL: \$4,846	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mahan, J. R.	LARC/Chestnutt, D.	46-Mech Engr
	LARC/Parrott, T. L.	

**NAG 1-446**      **Va Polytechnic Inst & St Univ**      **5050**  
 Experimental study of the properties of surface pressure fluctuations for separating turbulent boundary layers

<i>Period</i>	<i>Obligations</i>	
03/16/84-03/15/86	FY85: \$60,513 TOTAL: \$118,144	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Simpson, R. L.	LARC/Brooks, T. F.	41-Aero Engr

**NAG 1-505**      **Va Polytechnic Inst & St Univ**      **5057**  
 Integrated multi-disciplinary aircraft design

<i>Period</i>	<i>Obligations</i>	
08/01/84-10/31/85	FY85: TOTAL: \$52,869	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Grossman, B.	LARC/Dwoyer, D. L.	41-Aero Engr
Haftka, R. J.	LARC/Sobieslet, J.	

**NAG 1-459**      **Va Polytechnic Inst & St Univ**      **5051**  
 An accurate higher order theory for the nonlinear analysis of laminated composite plates and shells

<i>Period</i>	<i>Obligations</i>	
03/16/84-03/15/86	FY85: \$50,715 TOTAL: \$94,523	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Reddy, J. N.	LARC/Knight, N. F., Jr.	41-Aero Engr
	LARC/Starnes, J. H., Jr.	

**NAG 1-521**      **Va Polytechnic Inst & St Univ**      **5058**  
 X-ray photoelectron spectroscopy XPS analysis of polymeric materials exposed to space environment

<i>Period</i>	<i>Obligations</i>	
09/19/84-03/18/86	FY85: \$17,836 TOTAL: \$27,181	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wightman, J. P.	LARC/Santos-mason, B.	49-Engr, NEC

**NAG 1-481**      **Va Polytechnic Inst & St Univ**      **5052**  
 Deformations and strains in composite specimens

<i>Period</i>	<i>Obligations</i>	
06/01/84-11/30/85	FY85: TOTAL: \$30,655	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Post, D.	LARC/Williams, J. G.	41-Aero Engr

**NAG 1-537**      **Va Polytechnic Inst & St Univ**      **5059**  
 Postbuckling and crippling of graphite-epoxy channel and zee section columns

<i>Period</i>	<i>Obligations</i>	
11/01/84-07/31/86	FY85: \$43,683 TOTAL: \$43,683	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Johnson, E. R.	LARC/Starnes, J. H., Jr.	41-Aero Engr

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**VIRGINIA (Continued)**

**NAG 1-547**      **Va Polytechnic Inst & St Univ**      **5060**  
Application of cepstrum techniques to location of acoustic sources

Period	Obligations	
12/16/84-12/15/85	FY85: \$59,968	TOTAL: \$59,968
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
O'Brien, W. F.	LARC/DeLoach, R.	46-Mech Engr
Fuller, C. R.		
Hurst, C. J.		

**NAG 3-172**      **Va Polytechnic Inst & St Univ**      **5067**  
Study of the stress wave factor technique for the characterization of composite materials

Period	Obligations	
04/01/81-04/30/86	FY85: \$53,404	TOTAL: \$167,345
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Henneke, E. G.	LERC/Vary, A.	47-Materials Engr
Stinchcomb, W. W.		
Duke, J. C., Jr.		

**NAG 1-565**      **Va Polytechnic Inst & St Univ**      **5061**  
Simultaneous acoustical/structural design of composite fuselage structures

Period	Obligations	
03/01/85-12/31/85	FY85: \$29,416	TOTAL: \$29,416
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sundkvist, K. E.	LARC/Powell, C. A.	49-Engr, NEC
	LARC/McGary, M. C.	

**NAG 3-208**      **Va Polytechnic Inst & St Univ**      **5068**  
Graduate research projects in nonlinear and 3-D structural analysis

Period	Obligations	
08/29/81-08/26/84	FY85:	TOTAL: \$89,933
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Reddy, J. N.	LERC/Chamis, C. C.	41-Aero Engr
	LERC/Hirschbein, M. S.	

**NAG 1-570**      **Va Polytechnic Inst & St Univ**      **5062**  
Position control of flexible beams w/root actuation

Period	Obligations	
02/01/85-10/31/85	FY85: \$34,976	TOTAL: \$34,976
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Robertshaw, H. H.	LARC/Horner, G. C.	46-Mech Engr

**NAG 3-220**      **Va Polytechnic Inst & St Univ**      **5069**  
Implementation of input filter compensation for switching regulators

Period	Obligations	
10/15/81-10/13/83	FY85:	TOTAL: \$20,647
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lee, F. C.	LERC/Kolecki, J. C.	45-Elec Engr
Kelkar, S.	LERC/Banks, B. A.	

**NAG 1-601**      **Va Polytechnic Inst & St Univ**      **5063**  
Micromechanical modelling of compressive failure of composite plates with a notch

Period	Obligations	
06/17/85-09/16/85	FY85: \$8,058	TOTAL: \$8,058
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gurdal, Z.	LARC/Starnes, J. H.	41-Aero Engr
Haftka, R. T.		

**NAG 3-240**      **Va Polytechnic Inst & St Univ**      **5070**  
Feasibility study of bipolar-fet hybrid power transistors using discrete devices

Period	Obligations	
12/15/81-01/13/86	FY85: \$27,243	TOTAL: \$145,278
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chen, D. D.	LERC/Sundberg, G. R.	45-Elec Engr

**NAG 1-603**      **Va Polytechnic Inst & St Univ**      **5064**  
Interdisciplinary research on aeronautical and space vehicles

Period	Obligations	
06/20/85-11/03/86	FY85: \$100,371	TOTAL: \$100,371
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Haftka, R. T.	LARC/Adelman, H. M.	41-Aero Engr
Grossman, B.		
Cliff, E. N.		

**NAG 3-323**      **Va Polytechnic Inst & St Univ**      **5071**  
Ultrasonic stress wave characterization of composite materials

Period	Obligations	
10/01/82-07/31/85	FY85:	TOTAL: \$104,981
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Henneke, E. G., II	LERC/Vary, A.	47-Materials Engr
Duke, J. C., Jr.		
Stinchcomb, W. W.		

**NAG 2-17**      **Va Polytechnic Inst & St Univ**      **5065**  
Comparative evaluation of workload estimation techniques in piloting tasks

Period	Obligations	
01/15/80-03/14/84	FY85:	TOTAL: \$306,853
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wierwille, W. W.	ARC/Hart, S. G.	99-Multi-Discip

**NAG 3-347**      **Va Polytechnic Inst & St Univ**      **5072**  
Optimization of cascade blade mounting

Period	Obligations	
10/30/82-06/30/86	FY85: \$40,000	TOTAL: \$125,520
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Haftka, R. T.	LERC/Kaza, K. V.	41-Aero Engr

**NAG 2-256**      **Va Polytechnic Inst & St Univ**      **5066**  
Real jet effects on dual jets in a crossflow

Period	Obligations	
10/01/83-09/30/86	FY85: \$68,376	TOTAL: \$99,653
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schetz, J. A.	ARC/Aoyagi, K.	41-Aero Engr
Jakubowski, A. K.	ARC/Koenig, D. G.	

**NAG 3-405**      **Va Polytechnic Inst & St Univ**      **5073**  
Computer modeling and analysis of a bidirectional four-quadrant power converter

Period	Obligations	
03/16/83-09/15/84	FY85:	TOTAL: \$55,307
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lee, F. C.	LERC/Hansen, I. G.	45-Elec Engr

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<b>NAG 3-438</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>5074</b>
Fatigue growth of small cracks		
<i>Period</i>	<i>Obligations</i>	
06/25/83-10/23/85	FY85: \$80,000	TOTAL: \$179,884
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dowling, N. E.	LERC/Orange, T. W.	47-Materials Engr
	LERC/Shannon, J. L., Jr.	

<b>NAG 3-517</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>5075</b>
Development of LC 13 CNMR for the analysis of aviation fuels		
<i>Period</i>	<i>Obligations</i>	
01/10/84-01/09/85	FY85:	TOTAL: \$46,042
<i>Prin. Invest</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dorn, H. C.	LERC/Seng, G. T.	12-Chemistry

<b>NAG 3-551</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>5076</b>
<b>Control analysis and design for resonant converters</b>		
<i>Period</i>	<i>Obligations</i>	
05/01/84-10/31/85	FY85:	TOTAL: \$106,524
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lee, F. C.	LERC/Hansen, I.	45-Elec Engr

<b>NAG 3-593</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>5077</b>
Thermodynamic evaluation of transonic compressor rotors using the finite volume approach		
<i>Period</i>	<i>Obligations</i>	
12/20/84-12/19/85	FY85: \$40,121	TOTAL: \$40,121
<i>Prin. Invest</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Moore, J.	LERC/Wood, J. R.	41-Aero Engr

<b>NAG 5-518</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>5078</b>
Computer aided modeling and analysis of power processing systems		
<i>Period</i>	<i>Obligations</i>	
04/01/85-03/31/86	FY85: \$110,843	TOTAL: \$110,843
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lee, F. C.	GSFC/Rodriguez, G. E.	45-Elec Engr
Cho, B. H.	GSFC/Forde, F. E.	

NAG 8-453		Va Polytechnic Inst & St Univ		5079	
Anisotropic Compton scattered X-rays from active galactic nuclei:					
A theoretical study under the HEAO-2 guest observer program					
Period		Obligations			
05/06/83-05/05/86		FY85: \$3,900		TOTAL: \$3,900	
Prin. Invest.	NASA Tech. Officer		CASE Category		
O'dell, S. L.	MSFC/Johnson, W. G.		11-Astronomy		

NAG 9-95		Va Polytechnic Inst & St Univ		5080
Study of relationship between high and low grade Archean terrane implications for early Earth paleogeography				
Period		Obligations		
03/01/85-03/01/86		FY85: \$10,000	TOTAL: \$10,000	
Prin. Invest.	NASA Tech. Officer		CASE Category	
Eriksson, K. A.	JSC/Phinney, W. C.		32-Geological Sci	

<b>NAS 1-17100</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>5081</b>
Research in the area of physical and life sciences		
<i>Period</i>	<i>Obligations</i>	
09/20/82-09/19/85	FY85: \$115,747	TOTAL: \$299,013
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Unavailable	LARC/Prior, E. J.	99-Multi-Discip

<b>NAS 1-17256</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>5082</b>
A computer simulation model for managing aircraft survivability		
<i>Period</i>	<i>Obligations</i>	
12/22/82-12/21/85	FY85:	TOTAL: \$450,000
<i>Prin. Invest</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Drew, D. R.	LARC/Sobieski, J.	49-Enar, NEC

<b>NAS 1-18106</b> <b>Va Polytechnic Inst &amp; St Univ</b> <b>5083</b>	
Research effort in aerodynamics, mathematics, chemistry, physics, computer science, atmospheric science, and structural materials science	
<i>Period</i>	<i>Obligations</i>
08/30/85-08/29/88	FY85: \$90,104 TOTAL: \$90,104
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Unavailable	LARC/Prior, E. J. 41-Aero Enor

<b>NAS 5-22577</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>5084</b>
Communications link characterization study		
<i>Period</i>	<i>Obligations</i>	
09/08/76-04/07/85	FY85:	TOTAL: \$896,175
<i>Prin. Invest</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bostian, C. W.	GSFC/Hirschmann, E.	45-Elec Engr
Stutzman, W. L.		
Wiley, P. H.		

<b>NCC 1-71</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>5085</b>
High Reynolds number, flat-plate experiments in the national transonic facility		
<i>Period</i>	<i>Obligations</i>	
07/26/82-09/30/84	FY85:	TOTAL: \$114,624
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Saric, W. S.	LARC/Barnwell, R. W.	41-Aero Engr
	LARC/Peterson, J. B.	

NCC 2-71		Va Polytechnic Inst & St Univ		5086
The accelerated characterization of polymer based fiber reinforced composites				
Period	Obligations			
10/01/80-12/15/85	FY85: \$89,976	TOTAL: \$335,858		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Brinson, H. F.	ARC/Nelson, H. G.	47-Materials Engr		

<b>NGT 47-004-901</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>5087</b>
NASA graduate student researchers program		
<i>Period</i>	<i>Obligations</i>	
06/01/81-08/31/85	FY85:	TOTAL: \$40,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Telonis, D. P.	HQ-LB/Owens, F. C.	41-Aero Engr

NGT 47-004-802		Va Polytechnic Inst & St Univ		5088	
NASA graduate student researchers program					
Period		Obligations			
09/01/82-08/31/84		FY85:		TOTAL: \$27,000	
Prin. Invest.		NASA Tech. Officer		CASE Category	
Marchman, J. F.		HQ-LB/Owens, F. C.		41-Aero Engr	

# **NASA'S UNIVERSITY PROGRAM** **VIRGINIA (Continued)**

**NGT 47-004-803**      **Va Polytechnic Inst & St Univ**      **5089**  
NASA graduate student researchers program  
*Period*      *Obligations*  
06/01/82-09/30/85      FY85:      TOTAL: \$41,500  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Schetz, J. A.      HQ-LB/Owens, F. C.      41-Aero Engr

**NGT 47-004-804**      **Va Polytechnic Inst & St Univ**      **5090**  
NASA graduate student researchers program  
*Period*      *Obligations*  
07/28/83-07/27/84      FY85:      TOTAL: \$15,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Regan, J. T.      HQ-LB/Owens, F. C.      49-Engr, NEC

**NGT 47-004-805**      **Va Polytechnic Inst & St Univ**      **5091**  
NASA graduate student researchers program  
*Period*      *Obligations*  
04/15/83-04/14/86      FY85: \$18,000      TOTAL: \$48,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
O'Brien, W. F.      HQ-LB/Owens, F. C.      41-Aero Engr

**NGT 47-004-808**      **Va Polytechnic Inst & St Univ**      **5092**  
NASA graduate student researchers program  
*Period*      *Obligations*  
06/01/84-05/31/86      FY85: \$18,000      TOTAL: \$33,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Grossman, B.      HQ-LB/Owens, F. C.      43-Chem Engr

**NGT 47-004-809**      **Va Polytechnic Inst & St Univ**      **5093**  
NASA graduate student researchers program  
*Period*      *Obligations*  
03/16/84-03/15/85      FY85:      TOTAL: \$14,215  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Hallauer, W. L.      HQ-LB/Owens, F. C.      41-Aero Engr

**NGT 47-004-810**      **Va Polytechnic Inst & St Univ**      **5094**  
NASA graduate student researchers program  
*Period*      *Obligations*  
06/20/85-06/19/86      FY85: \$18,000      TOTAL: \$18,000  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Dugger, W. E.      HQ-LE/Owens, F. C.      11-Astronomy

**NSG 2301**      **Va Polytechnic Inst & St Univ**      **5095**  
Near-wall similarity in three-dimensional turbulent flows  
*Period*      *Obligations*  
04/01/78-09/30/84      FY85:      TOTAL: \$328,783  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Pierce, F. J.      ARC/Marvin, J. G.      41-Aero Engr  
ARC/Rubens, M. W.

**NSG 3239**      **Va Polytechnic Inst & St Univ**      **5096**  
Investigation of torsional-axial-lateral coupled response of geared systems  
*Period*      *Obligations*  
01/02/79-06/15/84      FY85:      TOTAL: \$220,152  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Mitchell, L. D.      LERC/Flemings, D. P.      41-Aero Engr  
LERC/Kascak, A. F.

**NAG 1-374**      **Virginia State University**      **5097**  
Annealing problems in proton and electron and electron irradiated GaAs solar cells  
*Period*      *Obligations*  
05/16/83-05/15/84      FY85:      TOTAL: \$35,442  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Stith, J. J.      LARC/Wilson, J. W.      19-Phys Sci, NEC  
LARC/Conway, E. J.

**NAG 1-416**      **Virginia State University**      **5098**  
Solid state physics research program  
*Period*      *Obligations*  
01/01/84-12/31/85      FY85: \$224,689      TOTAL: \$409,948  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Stronach, C. E.      LARC/Wilson, J. W.      19-Phys Sci, NEC  
Davenport, J. C.      LARC/Conway, E. J.  
Stith, J. J.

**NSG 1342**      **Virginia State University**      **5099**  
Material science and solid state physics studies with positive muon spin precession  
*Period*      *Obligations*  
01/01/77-01/31/84      FY85:      TOTAL: \$133,270  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
McCoy, R. M.      LARC/Singh, J. J.      13-Physics

## **WASHINGTON**

**NAG 1-41**      **University of Washington**      **5100**  
Radiation viewfactor analysis  
*Period*      *Obligations*  
03/01/80-12/31/85      FY85:      TOTAL: \$193,931  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Emery, A. F.      LARC/Pittman, C. M.      46-Mech Engr  
Kippenham, C. J.      LARC/Wieting, A. R.

**NAG 1-176**      **University of Washington**      **5101**  
Study of blackbody-pumped lasers  
*Period*      *Obligations*  
04/01/81-12/31/85      FY85: \$59,463      TOTAL: \$255,607  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Christiansen, W. H.      LARC/Deyoung, R. J.      13-Physics  
LARC/Conway, E. J.

**NAG 1-327**      **University of Washington**      **5102**  
Research related to the technology of space energy conversion systems  
*Period*      *Obligations*  
02/08/83-02/07/86      FY85: \$209,987      TOTAL: \$593,480  
*Prin. Invest.*      *NASA Tech. Officer*      *CASE Category*  
Hertzberg, A.      LARC/Conway, E. J.      42-Astro Engr  
Bruckner, A. P.      LARC/Deyoung, R.  
Mattick, A. T.

**NASA'S UNIVERSITY PROGRAM**  
**WASHINGTON (Continued)**

**NAG 2-66 University of Washington 5103**  
Wave dynamics and transport in the stratosphere  
*Period Obligations*  
10/01/80-01/31/85 FY85: TOTAL: \$486,040  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Holton, J. R. ARC/Summers, A. L. 31-Atmos Sci  
Leovy, C. B. ARC/Young, R. E.

**NAG 2-120 University of Washington 5104**  
The modelling of fibrous refractory composite insulation for development studies  
*Period Obligations*  
07/01/81-08/31/84 FY85: TOTAL: \$90,490  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Mueller, J. I. ARC/Goldstein, H. E. 47-Materials Engr  
Bollard, R. J.

**NAG 2-283 University of Washington 5105**  
Aerodynamics of vortex generators  
*Period Obligations*  
01/01/84-03/31/86 FY85: \$25,150 TOTAL: \$63,321  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Russell, D. A. ARC/King, L. S. 41-Aero Engr  
Breidenthal, R. E.

**NAG 2-346 University of Washington 5106**  
Quantitative modelling of human spatial habitability  
*Period Obligations*  
02/01/84-12/31/85 FY85: \$44,926 TOTAL: \$44,926  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wise, J. ARC/Clearwater, Y. A. 69-Psych, NEC  
ARC/Tanner, T.

**NAG 3-7 University of Washington 5107**  
In service shaping of abradable seals  
*Period Obligations*  
12/01/79-09/30/86 FY85: \$910 TOTAL: \$179,403  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Wolak, J. LERC/Strom, T. N. 46-Mech Engr  
Emery, A. F. LERC/Kiraly, L. J.

**NAG 3-376 University of Washington 5108**  
Investigation of three-dimensional boundary layer flows in subsonic diffusers  
*Period Obligations*  
12/05/82-04/24/86 FY85: \$30,000 TOTAL: \$175,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Childs, M. E. LERC/Hingst, W. R. 41-Aero Engr  
Gessner, F. B.

**NAG 3-525 University of Washington 5109**  
Coalescence dispersion modeling of turbulent combustion  
*Period Obligations*  
02/03/84-03/31/85 FY85: TOTAL: \$60,030  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Pratt, D. T. LERC/Bittker, D. 46-Mech Engr

**NAG 3-569 University of Washington 5110**  
Fractographic and microstructural characterization of 3500 hour durability specimens  
*Period Obligations*  
08/15/84-11/14/85 FY85: TOTAL: \$31,740  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Miller, A. D. LERC/Lancashire, R. B.  
47-Materials Engr

**NAG 5-45 University of Washington 5111**  
Observations of selected astronomical objects  
*Period Obligations*  
04/15/80-09/14/86 FY85: \$26,800 TOTAL: \$78,646  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Bohm, K. H. GSFC/Kondo, Y. 11-Astronomy  
Vitense, E. B.

**NAG 5-207 University of Washington 5112**  
Massive star mass loss during stellar evolution  
*Period Obligations*  
09/07/81-11/06/84 FY85: TOTAL: \$63,602  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hodge, P. W. GSFC/Kondo, Y. 11-Astronomy  
Bohm-vitense, E.

**NAG 5-342 University of Washington 5113**  
Sensitive Galaxian halo probe: Ultraviolet excess objects missing alpha  
*Period Obligations*  
07/01/83-01/31/87 FY85: \$14,037 TOTAL: \$47,837  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Margon, B. GSFC/Kondo, Y. 11-Astronomy  
York, D.  
Jenkins, E. B.

**NAG 5-354 University of Washington 5114**  
Intercomparison of cycles and electro underflight to satellite data  
*Period Obligations*  
08/01/83-12/31/85 FY85: \$47,849 TOTAL: \$92,194  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Katsaros, K. B. GSFC/Wilheit, T. T. 31-Atmos Sci

**NAG 5-357 University of Washington 5115**  
Mass loss and photospheric structure in early type spectrum variables  
*Period Obligations*  
08/01/83-06/30/86 FY85: \$62,198 TOTAL: \$72,398  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Brown, D. GSFC/Kondo, Y. 11-Astronomy  
Shore, S. N.  
Bolton, C. T.

**NAG 5-363 University of Washington 5116**  
Research relative to particle acceleration at interplanetary shocks  
*Period Obligations*  
08/15/83-12/14/85 FY85: TOTAL: \$44,162  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Potter, D. W. GSFC/Wales, R. O. 31-Atmos Sci



**NASA'S UNIVERSITY PROGRAM  
WASHINGTON (Continued)**

**NAG 5-373 University of Washington 5117**  
Study of energetic particle fluxes in and beyond the Earth's data magnetosphere

Period	Obligations	
10/01/83-09/30/85	FY85: \$190,000	TOTAL: \$344,391
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Parks, G. K.	GSFC/Wales, R. O.	31-Atmos Sci

**NAG 5-521 University of Washington 5118**  
Evaluation of surface radiation and energy budget stations

Period	Obligations	
03/15/85-03/14/86	FY85: \$39,957	TOTAL: \$39,957
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fritschen, L. J.	GSFC/Schmugge, T. J.	31-Atmos Sci
Simpson, J. R.	GSFC/Gurney, R. J.	

**NAG 5-549 University of Washington 5119**  
Carbon abundances in outer galaxy regions

Period	Obligations	
05/15/85-05/14/86	FY85: \$9,500	TOTAL: \$9,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fich, M.	GSFC/Kondo, Y.	11-Astronomy

**NAG 5-604 University of Washington 5120**  
Middle atmospheric electric fields over thunderstorm

Period	Obligations	
05/01/82-12/31/85	FY85: \$75,000	TOTAL: \$255,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Holzworth, R. H.	GSFC/Early, L. J.	13-Physics
Parks, G. K.	GSFC/Pless, R. H.	

**NAG 5-708 University of Washington 5121**  
Ultraviolet observations of extragalactic sources

Period	Obligations	
09/01/85-08/31/86	FY85: \$14,000	TOTAL: \$14,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hodge, P. W.	GSFC/Kondo, Y.	11-Astronomy
Bohm-vitense, E.		

**NAG 8-433 University of Washington 5122**  
Discrepant QSO X-ray luminosity function from the High Energy Astronomical Observatory (HEAO-2) data archive

Period	Obligations	
05/01/82-06/30/86	FY85:	TOTAL: \$36,485
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Margon, B. H.	MSFC/Johnson, W. G.	11-Astronomy

**NAG 8-516 University of Washington 5123**  
An investigation of the X-ray fluxes and variability of six cataclysmic variables

Period	Obligations	
02/25/85-02/24/86	FY85: \$8,742	TOTAL: \$8,742
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Szkody, P.	MSFC/Johnson, W. G.	11-Astronomy

**NAG 9-84 University of Washington 5124**  
The formation of cumulate rocks

Period	Obligations	
03/01/84-07/01/86	FY85: \$75,000	TOTAL: \$132,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McCallum, I. S.	JSC/Phinney, W. C.	32-Geological Sci

**NAG 9-124 University of Washington 5125**  
Orbital microcrater analysis

Period	Obligations	
06/01/85-05/31/86	FY85: \$20,000	TOTAL: \$20,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brownlee, D. E.	JSC/Horz, F.	32-Geological Sci

**NAGW 36 University of Washington 5126**  
Long term Viking Lander meteorology mission operations and analysis

Period	Obligations	
03/01/80-04/30/86	FY85: \$52,234	TOTAL: \$430,008
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tillman, J. E.	HQ-EL/Brinton, H. C.	31-Atmos Sci
	HQ-EL/Brunk, W. E.	

**NAGW 85 University of Washington 5127**  
Geologic remote sensing

Period	Obligations	
09/16/80-09/15/87	FY85: \$125,000	TOTAL: \$725,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Adams, J. B.	HQ-EE/Tuyahov, A. J.	32-Geological Sci

**NAGW 199 University of Washington 5128**  
Interdisciplinary research and development on the effects of the nature and properties of ceramic materials

Period	Obligations	
07/01/81-06/30/88	FY85:	TOTAL: \$1,815,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mueller, J. I.	HQ-RT/Bersch, C. F.	47-Materials Engr
	HQ-RT/Venneri, S. L.	

**NAGW 281 University of Washington 5129**  
Lifetime prediction and improvement studies for the Space Shuttle thermal protection system

Period	Obligations	
10/01/81-05/15/85	FY85:	TOTAL: \$392,095
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mueller, J. I.	HQ-MR/Greenshields, D.	49-Engr, NEC
	HQ-MR/Frandsen, N.	

**NAGW 303 University of Washington 5130**  
Air-sea interaction studies of satellite measurements

Period	Obligations	
04/01/82-09/30/84	FY85:	TOTAL: \$137,931
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brown, R. A.	HQ-EE/Patzert, W. C.	33-Oceanography
Katsaros, K.	HQ-EE/Wilson, W. S.	
Businger, J.		

**NAGW 328 University of Washington 5131**  
Impact crater scaling laws

Period	Obligations	
06/16/82-05/31/86	FY85: \$42,568	TOTAL: \$157,525
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Holsapple, K. A.	HQ-EL/Scott, D. H.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NASA'S UNIVERSITY PROGRAM  
WASHINGTON (Continued)**

**NAGW 412**                      **University of Washington**                      **5132**  
Local deformation of sea ice from SAR images  
*Period*                                      *Obligations*  
01/01/83-03/31/86                      FY85: \$144,819                      TOTAL: \$361,867  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
Rothrock, D. A.                      HQ-EE/Thomas, R. H. 33-Oceanography  
Thorndike, A. S.                      HQ-EE/Wilson, W. S.

**NAGW 471**                      **University of Washington**                      **5133**  
Investigations of stratospheric dynamics and transport using  
Nimbus satellite data  
*Period*                                      *Obligations*  
05/15/83-05/31/86                      FY85: \$165,749                      TOTAL: \$451,803  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
Leovy, C. B.                      HQ-EE/Smith, M. A.                      31-Atmos Sci  
Hartman, D. L.                      HQ-EE/Demore, W. B.

**NAGW 501**                      **University of Washington**                      **5134**  
Structure of mid-satellite cyclone as seen with microwave  
radiometry  
*Period*                                      *Obligations*  
08/01/83-07/31/84                      FY85:                      TOTAL: \$50,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
Katsaros, K. B.                      HQ-EE/Dodge, J. C.                      31-Atmos Sci

**NAGW 662**                      **University of Washington**                      **5135**  
Wave dynamics and transport in the stratosphere  
*Period*                                      *Obligations*  
12/01/84-11/30/85                      FY85: \$146,823                      TOTAL: \$146,823  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
Holton, J. R.                      HQ-EE/Butler, D. M.                      31-Atmos Sci  
HQ-EE/Demore, W. B.

**NAGW 679**                      **University of Washington**                      **5136**  
Study of the mesoscale structure over the ocean using SEASAT  
A satellite scatterometer (SASS)  
*Period*                                      *Obligations*  
01/01/85-12/31/85                      FY85: \$33,914                      TOTAL: \$33,914  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
Brown, R. A.                      HQ-EE/Patzert, W. C. 33-Oceanography  
HQ-EE/Wilson, W. S.

**NAGW 700**                      **University of Washington**                      **5137**  
A satellite study of polynas on the Siberian Alaskan shelf  
*Period*                                      *Obligations*  
01/01/85-12/31/85                      FY85: \$25,644                      TOTAL: \$25,644  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
Martin, S.                      HQ-EE/Thomas, R. H. 33-Oceanography  
HQ-EE/Wilson, W. S.

**NAGW 711**                      **University of Washington**                      **5138**  
Emission of methane and other trace gases from the Amazon  
varzea  
*Period*                                      *Obligations*  
01/01/85-12/31/85                      FY85: \$70,000                      TOTAL: \$70,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
Richey, J. E.                      HQ-EB/Rambler, M. B.                      54-Env Biology  
Devol, A. H.                      HQ-EB/Devincenzi, D. L.

**NAGW 724**                      **University of Washington**                      **5139**  
Electrodynamics of the middle atmosphere: Superpressure  
balloon program  
*Period*                                      *Obligations*  
02/15/85-02/14/86                      FY85: \$65,000                      TOTAL: \$65,000  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
Holzworth, R. H.                      HQ-EE/Lynch, J. T.                      13-Physics  
HQ-EE/Shawhan, S. D.

**NAGW 739**                      **University of Washington**                      **5140**  
Dependence of the amplitude of short water waves on long  
waves and wind  
*Period*                                      *Obligations*  
05/01/85-04/30/86                      FY85: \$44,220                      TOTAL: \$44,220  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
Katsaros, K. B.                      HQ-EE/Patzert, W. C. 33-Oceanography  
HQ-EE/Wilson, W. S.

**NAGW 805**                      **University of Washington**                      **5141**  
Nagoya X-ray collaborations  
*Period*                                      *Obligations*  
08/15/85-08/14/86                      FY85: \$9,996                      TOTAL: \$9,996  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
Boynton, P. E.                      HQ-EZ/Kaluzeinski, L. J.                      11-Astronomy  
Deeter, J. E.                      HQ-EZ/Cline, T. L.

**NAS 1-14341**                      **University of Washington**                      **5142**  
Science support for the limb infrared monitor of the stratosphere  
experiment  
*Period*                                      *Obligations*  
04/12/76-09/30/83                      FY85:                      TOTAL: \$158,609  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
Leovy, C. B.                      LARC/Russell, J. M., III                      31-Atmos Sci  
LARC/Sullivan, E. M.

**NAS 1-16462**                      **University of Washington**                      **5143**  
Scientific investigations for the Earth radiation budget experiment  
(ERBE)  
*Period*                                      *Obligations*  
09/30/80-09/29/85                      FY85: \$135,000                      TOTAL: \$201,020  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
Hartman, D. L.                      LARC/Hall, J. B.                      31-Atmos Sci  
Wallace, J. M.                      LARC/Barkstrom, B. R.

**NAS 1-17170**                      **University of Washington**                      **5144**  
Numerical prediction of thrust reversing effects of two dimensional  
nonaxisymmetric nozzles  
*Period*                                      *Obligations*  
09/20/82-12/31/85                      FY85:                      TOTAL: \$146,932  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
MacCormack, R. W.                      LARC/Putnam, L. E.                      41-Aero Engr  
LARC/Wilmoth, R. G.

**NAS 5-26301**                      **University of Washington**                      **5145**  
Wave dynamics and transport in the middle atmosphere  
(UARS)  
*Period*                                      *Obligations*  
10/01/80-12/31/85                      FY85:                      TOTAL: \$31,821  
*Prin. Invest.*                                      *NASA Tech. Officer*                                      *CASE Category*  
Holton, J. R.                      GSFC/Rouzer, L. E.                      31-Atmos Sci



# **NASA'S UNIVERSITY PROGRAM WASHINGTON (Continued)**

**NSG 9052**                      **University of Washington**                      **5160**  
A study of interplanetary dust  
*Period*                                      *Obligations*  
03/01/77-02/01/86                      FY85: \$147,000                      TOTAL: \$1,055,018  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Brownlee, D. E.                      JSC/Brown, I. D.                      31-Atmos Sci

**NAG 5-410**                      **Washington State University**                      **5161**  
Studies of infrared symbiotic stars/planetary nebulae  
*Period*                                      *Obligations*  
06/15/84-06/14/86                      FY85: \$6,716                      TOTAL: \$12,879  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Lutz, J. H.                      GSFC/Kondo, Y.                      11-Astronomy

**NAS 5-28758**                      **Washington State University**                      **5162**  
Spectral characteristics and the extent of the palaise formation  
*Period*                                      *Obligations*  
08/06/85-08/05/87                      FY85: \$85,477                      TOTAL: \$85,477  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Frazier, B. E.                      GSFC/Oseroff, H.                      39-Env Sci, NEC  
Busacca, A.

**NCA 2-840202**                      **Washington State University**                      **5163**  
Fracto-emission from graphite/epoxy composites  
*Period*                                      *Obligations*  
06/01/82-11/30/84                      FY85:                      TOTAL: \$25,972  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Dickinson, J. T.                      ARC/Nelson, H.                      13-Physics

**NCA 2-840401**                      **Washington State University**                      **5164**  
Hydrocarbon chemisorption on small metal particles  
*Period*                                      *Obligations*  
06/01/84-05/31/86                      FY85: \$7,000                      TOTAL: \$22,741  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Dickinson, J. T.                      ARC/Poppa, H.                      13-Physics

**NGT 48-001-800**                      **Washington State University**                      **5165**  
NASA graduate student researchers program  
*Period*                                      *Obligations*  
06/01/85-05/31/86                      FY85: \$16,960                      TOTAL: \$16,960  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Dickinson, J. T.                      HQ-LE/Owens, F. C.                      13-Physics

## **WEST VIRGINIA**

**NAG 1-433**                      **West Virginia University**                      **5166**  
Regional Earth radiation budget survey from geostationary  
satellites-conceptual study  
*Period*                                      *Obligations*  
01/01/84-10/15/84                      FY85:                      TOTAL: \$26,774  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Mahan, J. R.                      LARC/Luther, M. R.                      31-Atmos Sci  
LARC/Hinton, D. E.

**NAG 1-571**                      **West Virginia University**                      **5167**  
Development of an enhanced thermal structural methodology  
via transform methods based finite element formulations  
*Period*                                      *Obligations*  
05/16/85-05/15/86                      FY85: \$47,949                      TOTAL: \$47,949  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Tamma, K. K.                      LARC/Robinson, J. C.                      46-Mech Engr  
LARC/Shore, C. P.

**NGT 49-001-801**                      **West Virginia University**                      **5168**  
NASA graduate student researchers program  
*Period*                                      *Obligations*  
05/16/84-05/15/86                      FY85: \$17,000                      TOTAL: \$29,650  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Eli, R.                      HQ-LB/Owens, F. C.                      54-Env Biology

**NGT 49-001-802**                      **West Virginia University**                      **5169**  
NASA graduate student researchers program  
*Period*                                      *Obligations*  
07/01/85-06/30/86                      FY85: \$18,000                      TOTAL: \$18,000  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Padhye, A. R.                      HQ-LE/Owens, F. C.                      41-Aero Engr

## **WISCONSIN**

**NAS 8-32901**                      **Beloit College**                      **5170**  
Scientific investigations in support of the space telescope  
project  
*Period*                                      *Obligations*  
02/22/78-06/30/86                      FY85: \$40,900                      TOTAL: \$201,530  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Schroeder, D. J.                      MSFC/O'dell, C. R.                      11-Astronomy

**NAGW 658**                      **Lawrence University**                      **5171**  
General geologic and petrographic study of the Glover Bluff,  
Wisconsin, impact structure  
*Period*                                      *Obligations*  
10/01/84-09/30/85                      FY85: \$7,899                      TOTAL: \$7,899  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Read, W. F.                      HQ-EL/Boyce, J. M.                      32-Geological Sci  
HQ-EL/Holt, H. E.

**NAG 2-212**                      **Marquette University**                      **5172**  
Alterations in skeletal muscle with disuse atrophy  
*Period*                                      *Obligations*  
11/01/82-10/31/85                      FY85: \$50,440                      TOTAL: \$136,620  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Fitts, R. H.                      ARC/Ellis, S.                      51-Biological Sci  
Unsworth, B. R.  
Courtright, J. B.

**NAS 2-11305**                      **Medical College of Wisconsin**                      **5173**  
Electron microscopy, electromyography and protease activity of  
rat hind limb muscles  
*Period*                                      *Obligations*  
08/02/82-09/30/86                      FY85: \$112,872                      TOTAL: \$391,955  
*Prin. Invest.*                      *NASA Tech. Officer*                      *CASE Category*  
Riley, D. A.                      ARC/Ferandin, J. A.                      51-Biological Sci  
ARC/Chee, O.

**NASA'S UNIVERSITY PROGRAM  
WISCONSIN (Continued)**

**NCC 2-266 Medical College of Wisconsin 5174**  
The role of stretch-induced growth factors in skeletal muscle atrophy

Period	Obligations	
08/01/83-03/31/86	FY85: \$87,091	TOTAL: \$172,340
Prin. Invest.	NASA Tech. Officer	CASE Category
Riley, D. A.	ARC/Ellis, S.	56-Medical Sciences

**NAG 2-358 University of Wisconsin - Madison 5181**  
He II fluid dynamics studies for spaceborne cryogenic systems

Period	Obligations	
07/01/85-12/31/85	FY85: \$50,000	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Vansciver, S. W.	ARC/Kittel, P.	46-Mech Engr
Walstrom, P. L.	ARC/Mansfield, J. A.	

**NAG 1-553 University of Wisconsin - Madison 5175**  
Continental middle and high cloud project for fire

Period	Obligations	
01/01/85-12/31/85	FY85: \$25,184	TOTAL: \$25,184
Prin. Invest.	NASA Tech. Officer	CASE Category
Suomi, V. E.	LARC/McDougal, D. S.	31-Atmos Sci
Wylie, D. P.	LARC/Suttles, J. T.	

**NAG 3-274 University of Wisconsin - Madison 5182**  
Effects of alternate fuels properties on combustion and emission mechanisms in direct injected engines

Period	Obligations	
07/01/82-05/31/84	FY85:	TOTAL: \$139,999
Prin. Invest.	NASA Tech. Officer	CASE Category
Borman, G. L.	LERC/Simon, F. F.	46-Mech Engr
Foster, D. E.		
Myers, P. S.		

**NAG 1-592 University of Wisconsin - Madison 5176**  
Minimum energy routing through interactive techniques merit modeling

Period	Obligations	
05/20/85-05/19/86	FY85: \$75,267	TOTAL: \$75,267
Prin. Invest.	NASA Tech. Officer	CASE Category
Wylie, D. P.	LARC/Burgess, M. A.	49-Engr, NEC
Norton, C.		

**NAG 3-436 University of Wisconsin - Madison 5183**  
Containerless-processing of under cooled melts

Period	Obligations	
09/01/83-08/29/86	FY85: \$38,000	TOTAL: \$248,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Perepezhko, J. H.	LERC/Gray, H. R.	47-Materials Engr
	LERC/Harf, F. H.	

**NAG 2-167 University of Wisconsin - Madison 5177**  
Identification of an unknown humoral agent responsible for bone mobilization

Period	Obligations	
03/01/82-12/31/84	FY85:	TOTAL: \$191,575
Prin. Invest.	NASA Tech. Officer	CASE Category
Deluca, H. F.	ARC/Young, D. R.	51-Biological Sci
Schnoes, H. K.		

**NAG 3-492 University of Wisconsin - Madison 5184**  
Feasibility study of an induction generator as an aircraft electric power source

Period	Obligations	
11/15/83-11/14/84	FY85:	TOTAL: \$53,175
Prin. Invest.	NASA Tech. Officer	CASE Category
Novotny, D. W.	LERC/Hansen, I. G.	45-Elec Engr
Lipo, T. A.		

**NAG 2-242 University of Wisconsin - Madison 5178**  
Thermal and electrical contact conductance studies

Period	Obligations	
06/01/83-08/31/85	FY85: \$17,500	TOTAL: \$67,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Van Sciver, S. W.	ARC/Kittel, P.	45-Elec Engr
	ARC/Lum, H.	

**NAG 3-631 University of Wisconsin - Madison 5185**  
Feasibility study of an induction generator as an aircraft electric power source

Period	Obligations	
04/05/85-04/04/86	FY85: \$68,340	TOTAL: \$68,340
Prin. Invest.	NASA Tech. Officer	CASE Category
Lipo, T. A.	LERC/Hansen, I. G.	45-Elec Engr
Novotny, D. W.	LERC/Terdan, F. F.	

**NAG 2-265 University of Wisconsin - Madison 5179**  
Dynamical behavior of the polarization features on Venus from the orbiter cloud photopolarimeter OCPP data

Period	Obligations	
10/01/83-09/30/85	FY85: \$31,217	TOTAL: \$61,828
Prin. Invest.	NASA Tech. Officer	CASE Category
Limaye, S.	ARC/Fimmel, R. O.	11-Astronomy
	ARC/Craig, R. A.	

**NAG 5-23 University of Wisconsin - Madison 5186**  
Analysis of three-dimensional thunderstorm model output in terms of geosynchronous satellite observations

Period	Obligations	
03/01/80-11/30/85	FY85: \$39,004	TOTAL: \$162,743
Prin. Invest.	NASA Tech. Officer	CASE Category
Schlesinger, R. E.	GSFC/Adler, R. F.	31-Atmos Sci

**NAG 2-266 University of Wisconsin - Madison 5180**  
Diagnostic modeling of meridional circulation on Venus

Period	Obligations	
10/01/83-09/30/85	FY85: \$25,200	TOTAL: \$49,933
Prin. Invest.	NASA Tech. Officer	CASE Category
Revercomb, H.	ARC/Fimmel, R. O.	11-Astronomy
	ARC/Craig, R. A.	

**NAG 5-81 University of Wisconsin - Madison 5187**  
Resolution studies and energy diagnostics of global data and climate model simulations

Period	Obligations	
06/15/80-10/31/86	FY85: \$183,417	TOTAL: \$396,880
Prin. Invest.	NASA Tech. Officer	CASE Category
Johnson, D. R.	GSFC/Atlas, R. M.	31-Atmos Sci

# **NASA'S UNIVERSITY PROGRAM** **WISCONSIN (Continued)**

**NAG 5-186 University of Wisconsin - Madison 5188**  
Ultraviolet studies with satellite data

Period	Obligations
06/15/81-12/31/85	FY85: \$71,995 TOTAL: \$309,932
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Savage, B. D.	GSFC/Kondo, Y.
Fitzpatrick, E. L.	11-Astronomy
Massa, D. L.	

**NAG 5-391 University of Wisconsin - Madison 5195**  
Detection of severe thunderstorms by the scanning multichannel microwave radiometer

Period	Obligations
02/01/84-04/30/85	FY85: TOTAL: \$74,539
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Martin, D. W.	GSFC/Adler, R. F.
	31-Atmos Sci

**NAG 5-274 University of Wisconsin - Madison 5189**  
Technique development to improve satellite soundings over radiatively complex terrain conditions

Period	Obligations
09/01/82-11/30/84	FY85: TOTAL: \$78,952
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Suomi, V. E.	GSFC/Susskind, J.
Smith, W. L.	31-Atmos Sci

**NAG 5-416 University of Wisconsin - Madison 5196**  
Devising new highly sensitive techniques for detecting astronomical sources

Period	Obligations
03/25/84-05/15/86	FY85: \$8,995 TOTAL: \$18,390
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Roesler, F. L.	GSFC/Gull, T. R.
	11-Astronomy

**NAG 5-301 University of Wisconsin - Madison 5190**  
Comparison of satellite wind observations in the tropics with general circulation model simulations

Period	Obligations
04/01/83-09/30/84	FY85: TOTAL: \$63,143
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Suomi, V. E.	GSFC/Kalnag, E.
	31-Atmos Sci

**NAG 5-423 University of Wisconsin - Madison 5197**  
Dependence of wind properties on luminosity class for selected stars

Period	Obligations
07/01/84-06/30/85	FY85: \$4,236 TOTAL: \$10,251
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Cassinelli, J. P.	GSFC/Kondo, Y.
Massa, D.	11-Astronomy

**NAG 5-316 University of Wisconsin - Madison 5191**  
New mathematical methods for variational objective analysis of meteorological information

Period	Obligations
05/01/83-12/14/85	FY85: \$105,423 TOTAL: \$217,854
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Wahba, G.	GSFC/Kalnay, E.
Johnson, D. R.	31-Atmos Sci

**NAG 5-498 University of Wisconsin - Madison 5198**  
Utility of water vapor-tracked winds in the analysis of satellite data

Period	Obligations
02/01/85-01/31/86	FY85: \$10,177 TOTAL: \$10,177
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Smith, W. L.	GSFC/Atlas, R. M.
	31-Atmos Sci

**NAG 5-353 University of Wisconsin - Madison 5192**  
The geometric structure of eclipsing symbiotic binaries

Period	Obligations
08/01/83-10/14/86	FY85: TOTAL: \$2,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Anderson, C. M.	GSFC/Kondo, Y.
Oliversen, N. A.	11-Astronomy
Stencel, R. E.	

**NAG 5-580 University of Wisconsin - Madison 5199**  
Determine precipitation rates from visible and infrared satellite images of clouds

Period	Obligations
07/01/85-11/30/85	FY85: \$35,000 TOTAL: \$35,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Weinman, J. A.	GSFC/Cahalan, R. F.
Chin, R. T.	31-Atmos Sci

**NAG 5-380 University of Wisconsin - Madison 5193**  
A study of reddening in galactic symbiotic stars

Period	Obligations
12/01/83-11/30/85	FY85: TOTAL: \$9,441
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Code, A. D.	GSFC/Kondo, Y.
Slovak, M. H.	11-Astronomy

**NAG 5-581 University of Wisconsin - Madison 5200**  
An investigation of the broad-line regions of subject I galaxies

Period	Obligations
07/15/85-07/14/86	FY85: \$11,605 TOTAL: \$11,605
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Mathis, J. S.	GSFC/Kondo, Y.
Clayton, G. C.	11-Astronomy

**NAG 5-385 University of Wisconsin - Madison 5194**  
Research relative to the use of available potential energy to evaluate global data sets

Period	Obligations
01/01/84-06/30/86	FY85: \$33,000 TOTAL: \$81,328
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
Horn, L. H.	GSFC/Baker, W.
Koehler, T. L.	31-Atmos Sci

**NAG 5-594 University of Wisconsin - Madison 5201**  
Investigation of single photon calorimeters for X ray spectroscopy

Period	Obligations
08/01/85-05/31/86	FY85: \$246,000 TOTAL: \$246,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>
McCammon, D.	GSFC/Glasser, C. A.
Guckel, H.	13-Physics
Kraushaar, W.	

**NASA'S UNIVERSITY PROGRAM**  
**WISCONSIN (Continued)**

**NAG 5-629 University of Wisconsin - Madison 5202**  
Cosmic X-ray physics  
*Period Obligations*  
01/01/85-12/31/85 FY85: \$220,000 TOTAL: \$220,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
McCammon, D. GSFC/Early, L. J. 13-Physics  
Cox, D. P. GSFC/Pless, R. H.  
Kraushaar, W. L.

**NAG 8-401 University of Wisconsin - Madison 5203**  
X-ray absorption by dark nebulae  
*Period Obligations*  
06/15/81-12/31/85 FY85: TOTAL: \$9,305  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Sanders, W. T. MSFC/Stone, J. F. 11-Astronomy

**NAG 8-431 University of Wisconsin - Madison 5204**  
Limits on coronal material in normal galaxies  
*Period Obligations*  
05/01/82-04/30/86 FY85: TOTAL: \$6,099  
*Prin. Invest. NASA Tech. Officer CASE Category*  
McCammon, D. MSFC/Stone, J. F. 11-Astronomy

**NAG 8-534 University of Wisconsin - Madison 5205**  
Analysis of HEAO 2 solid state spectrometer observations of early type stars  
*Period Obligations*  
06/01/85-05/31/86 FY85: \$19,991 TOTAL: \$19,991  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cassinelli, J. P. MSFC/Johnson, W. G. 11-Astronomy

**NAGW 275 University of Wisconsin - Madison 5206**  
Charged particle acceleration mechanisms in sparse plasmas double layers  
*Period Obligations*  
01/15/82-12/14/85 FY85: \$43,000 TOTAL: \$154,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Hershkovitz, N. HQ-EE/Lynch, J. T. 19-Phys Sci, NEC  
HQ-EE/Shawhan, S. D.

**NAGW 283 University of Wisconsin - Madison 5207**  
Studies of the supermassive central star of the 30 Doradus nebula and related objects  
*Period Obligations*  
02/01/82-05/31/86 FY85: TOTAL: \$77,928  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cassinelli, J. P. HQ-EZ/Stencel, R. E. 11-Astronomy  
Mathis, J. S. HQ-EZ/Weiler, E. J.  
Savage, B. D.

**NAGW 314 University of Wisconsin - Madison 5208**  
Studies of Jupiter's atmospheric circulation and cloud structure  
*Period Obligations*  
04/15/82-07/14/84 FY85: TOTAL: \$170,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Suomi, V. E. HQ-EL/Brinton, H. C. 31-Atmos Sci  
HQ-EL/Evans, N.

**NAGW 380 University of Wisconsin - Madison 5209**  
Research in support of NASA's space science and application programs  
*Period Obligations*  
11/01/82-10/31/84 FY85: TOTAL: \$153,881  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Weinman, J. A. HQ-E/Rosendhal, J. D. 11-Astronomy  
Chin, R. T. HQ-E/Raney, W. P.

**NAGW 422 University of Wisconsin - Madison 5210**  
Studies of ultraviolet intrinsic polarization of stars  
*Period Obligations*  
04/01/83-02/28/86 FY85: \$31,210 TOTAL: \$92,625  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cassinelli, J. P. HQ-EZ/Stencel, R. E. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NAGW 435 University of Wisconsin - Madison 5211**  
Thin film technology for ultraviolet optical coatings  
*Period Obligations*  
05/01/83-12/31/84 FY85: TOTAL: \$28,920  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Cab, A. D. HQ-EZ/Weiler, E. J. 11-Astronomy  
HQ-EZ/Boggess, N. W.

**NAGW 598 University of Wisconsin - Madison 5212**  
Theoretical studies of interstellar dust and gaseous nebulae  
*Period Obligations*  
06/01/84-09/30/86 FY85: TOTAL: \$40,831  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Mathis, J. S. HQ-EZ/Stencel, R. E. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NAGW 695 University of Wisconsin - Madison 5213**  
Ground-based obs of comet Haley/Giacovini-Finner/Jup 10  
*Period Obligations*  
01/15/85-01/14/86 FY85: \$55,000 TOTAL: \$55,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Scherb, F. HQ-EL/Brinton, H. C. 11-Astronomy  
HQ-EL/Hillman, J. J.

**NAGW 756 University of Wisconsin - Madison 5214**  
Statistical analysis of stratospheric ozone and temperature data for trends  
*Period Obligations*  
07/01/85-06/30/86 FY85: \$45,005 TOTAL: \$45,005  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Reinsel, G. C. HQ-EE/Smith, M. A. 31-Atmos Sci  
HQ-EE/Butler, D. M.

**NAGW 803 University of Wisconsin - Madison 5215**  
An infrared study of low mass pre-main sequence stars embedded in molecular clouds  
*Period Obligations*  
09/01/85-08/31/86 FY85: \$21,398 TOTAL: \$21,398  
*Prin. Invest. NASA Tech. Officer CASE Category*  
Churchwell, E. B. HQ-EZ/Stencel, R. E. 11-Astronomy  
HQ-EZ/Weiler, E. J.

**NASA'S UNIVERSITY PROGRAM**  
**WISCONSIN (Continued)**

**NAS 1-16507 University of Wisconsin - Madison 5216**  
 Science support for the Earth radiation budget experiment (ERBE)

<i>Period</i>	<i>Obligations</i>	
10/17/80-10/16/85	FY85: \$119,175	TOTAL: \$213,175
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, W. L.	LARC/Hall, J. B., Jr.	31-Atmos Sci
Suomi, V. W.	LARC/Barkstrom, B. R.	
Sromovsky, L. A.		

**NAS 1-17688 University of Wisconsin - Madison 5217**  
 Acquisition of GOES east measurements for the Earth radiation budget experiment (ERBE)

<i>Period</i>	<i>Obligations</i>	
11/06/84-11/05/87	FY85: \$107,512	TOTAL: \$107,512
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Suomi, V. E.	LARC/Keynton, R. J.	31-Atmos Sci

**NAS 2-11615 University of Wisconsin - Madison 5218**  
 Co-investigator support for the Galileo net flux radiometer experiment

<i>Period</i>	<i>Obligations</i>	
05/01/83-01/15/85	FY85:	TOTAL: \$24,904
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sromovsky, L. A.	ARC/Boese, R. W.	11-Astronomy

**NAS 2-12078 University of Wisconsin - Madison 5219**  
 Co-investigator support on the Galileo net flux radiometer experiment

<i>Period</i>	<i>Obligations</i>	
01/01/85-09/30/85	FY85: \$20,950	TOTAL: \$20,950
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sromovsky, L. A.	ARC/Boese, R. W.	99-Multi-Discip

**NAS 5-24487 University of Wisconsin - Madison 5220**  
 High speed photometer for the space telescope printer

<i>Period</i>	<i>Obligations</i>	
03/08/78-07/31/87	FY85: \$1,544,025	TOTAL: \$8,360,858
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bliss, R.	GSFC/Barr, A.	11-Astronomy

**NAS 5-25487 University of Wisconsin - Madison 5221**  
 Support to the space telescope wide field planetary camera development team

<i>Period</i>	<i>Obligations</i>	
02/01/79-12/31/83	FY85:	TOTAL: \$120,274
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Code, A. D.	GSFC/Fellerman, K.	11-Astronomy

**NAS 5-25714 University of Wisconsin - Madison 5222**  
 Support of high resolution spectrograph (HRS)

<i>Period</i>	<i>Obligations</i>	
05/16/79-09/30/86	FY85: \$19,296	TOTAL: \$226,296
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Savage, B. C.	GSFC/Vitagliano, H. D.	11-Astronomy

**NAS 5-26078 University of Wisconsin - Madison 5223**  
 Generate an investigation development plan and establish preliminary interfaces for the diffuse soft X-ray Bragg spectrometer

<i>Period</i>	<i>Obligations</i>	
03/10/80-06/01/88	FY85: \$1,743,861	TOTAL: \$2,867,372
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kraushaer, W. L.	GSFC/Mercanti, E.	11-Astronomy

**NAS 5-26777 University of Wisconsin - Madison 5224**  
 Development phase of the Wisconsin ultraviolet photo polarimeter experiment (WUPPE)

<i>Period</i>	<i>Obligations</i>	
09/04/81-09/30/88	FY85: \$1,347,600	TOTAL: \$4,132,760
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Code, A. D.	MSFC/Owens, J.	11-Astronomy
Nordsieck, K.		

**NAS 5-27608 University of Wisconsin - Madison 5225**  
 Development of high-resolution interferometer sounder (HIS) phase II

<i>Period</i>	<i>Obligations</i>	
05/13/83-12/31/85	FY85: \$324,380	TOTAL: \$877,879
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, W. L.	GSFC/Hurley, E. J.	31-Atmos Sci

**NAS 8-33799 University of Wisconsin - Madison 5226**  
 Application of the AVE-SESAME data set to mesoscale studies

<i>Period</i>	<i>Obligations</i>	
05/13/80-08/31/85	FY85: \$70,000	TOTAL: \$827,338
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Suomi, V. E.	MSFC/Arnold, J. E.	31-Atmos Sci
Mosher, F. R.	MSFC/Turner, R. E.	

**NAS 8-34732 University of Wisconsin - Madison 5227**  
 Cooperative visible infrared spin scan radiometer atmospheric sounder

<i>Period</i>	<i>Obligations</i>	
07/29/82-09/28/86	FY85: \$100,000	TOTAL: \$256,686
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Suomi, V. E.	MSFC/Wilson, G. S.	31-Atmos Sci
Menzel, P.	MSFC/Arnold, J. E.	
Smith, W. L.		

**NAS 8-35981 University of Wisconsin - Madison 5228**  
 Studies of lightning data in conjunction with geostationary satellite data

<i>Period</i>	<i>Obligations</i>	
06/23/84-06/22/86	FY85: \$69,000	TOTAL: \$112,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Martin, D.	MSFC/Christian, H. J.	31-Atmos Sci
Mosher, F. R.	MSFC/Arnold, J. E.	

**NAS 8-36547 University of Wisconsin - Madison 5229**  
 Investigation of the detection of rotating thunderstorms by storm top features as observed by meteorological satellite

<i>Period</i>	<i>Obligations</i>	
09/27/85-09/26/87	FY85: \$85,000	TOTAL: \$85,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Anderson, C. E.	MSFC/Green, W. M.	31-Atmos Sci
	MSFC/Smith, G. T.	



# **NASA'S UNIVERSITY PROGRAM** **WISCONSIN (Continued)**

**NAS 9-15580 University of Wisconsin - Madison 5230**  
 Vitamin D metabolites and bone demineralization  
*Period Obligations*  
 04/01/78-12/01/85 FY85: \$55,000 TOTAL: \$406,342  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Schnoes, H. K. JSC/Cintron-trevino, N.  
 56-Medical Sciences

**NASW 3829 University of Wisconsin - Madison 5231**  
 Large scale scientific computation conference  
*Period Obligations*  
 10/14/83-04/01/84 FY85: TOTAL: \$4,571  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Parter, S. V. HQ-RT/Goorjian, P. M.  
 22-Computer Science  
 HQ-RT/Brown, C. E.

**NCA 2-28 University of Wisconsin - Madison 5232**  
 Development and testing of biogeochemical cycling models and related canopy studies  
*Period Obligations*  
 04/01/85-03/31/87 FY85: \$35,900 TOTAL: \$35,900  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Aber, J. D. ARC/Peterson, D. L. 32-Geological Sci  
 ARC/Matson, P. A.

**NCA 2-865401 University of Wisconsin - Madison 5233**  
 Formulation of canopy driven biogeochemical cycling models  
*Period Obligations*  
 04/15/84-03/31/85 FY85: \$4,411 TOTAL: \$21,411  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Aber, J. D. ARC/Peterson, D. L. 55-Agriculture Sci  
 ARC/Matson, P. A.

**NCC 2-301 University of Wisconsin - Madison 5234**  
 Growth of potatoes for CELSS  
*Period Obligations*  
 05/01/84-11/30/85 FY85: \$132,562 TOTAL: \$198,464  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Tibbitts, T. ARC/Macelroy, R. D. 51-Biological Sci

**NGL 50-002-013 University of Wisconsin - Madison 5235**  
 Investigations and studies of ultraviolet stellar spectra and associated instrumentation  
*Period Obligations*  
 05/20/84-11/30/85 FY85: TOTAL: \$2,886,552  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Code, A. D. GSFC/Early, L. J. 11-Astronomy  
 GSFC/Pless, R. H.

**NGL 50-002-044 University of Wisconsin - Madison 5236**  
 Research in cosmic and solar physics  
*Period Obligations*  
 10/25/65-12/31/85 FY85: TOTAL: \$3,162,626  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Kraushaar, W. L. GSFC/Early, L. J. 11-Astronomy  
 Sanders, W. T. GSFC/Pless, R. H.  
 McCammon, D.

**NGR 50-002-162 University of Wisconsin - Madison 5237**  
 Solar wind physics  
*Period Obligations*  
 01/26/71-06/30/84 FY85: TOTAL: \$436,928  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Scherb, F. HQ-EE/Lynch, J. T. 13-Physics  
 HQ-EE/Wiskerchen, M. J.

**NGR 50-002-189 University of Wisconsin - Madison 5238**  
 Cloud image processing for planetary flybys  
*Period Obligations*  
 01/19/72-02/28/86 FY85: \$94,876 TOTAL: \$678,959  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Suomi, V. E. HQ-EL/Brinton, H. C. 31-Atmos Sci  
 HQ-EL/Brunk, W. E.

**NGT 50-002-800 University of Wisconsin - Madison 5239**  
 NASA graduate student researchers program  
*Period Obligations*  
 09/01/82-08/31/85 FY85: TOTAL: \$43,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Kiefer, R. W. HQ-LB/Owens, F. C. 49-Engr, NEC

**NGT 50-002-801 University of Wisconsin - Madison 5240**  
 NASA graduate student researchers program  
*Period Obligations*  
 07/01/83-06/30/86 FY85: \$18,000 TOTAL: \$48,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Giese, R. L. HQ-LB/Owens, F. C. 39-Env Sci, NEC

**NGT 50-002-802 University of Wisconsin - Madison 5241**  
 NASA graduate student researchers program  
*Period Obligations*  
 06/01/85-05/31/86 FY85: \$18,000 TOTAL: \$18,000  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Herman, G. F. HQ-LE/Owens, F. C. 39-Env Sci, NEC

**NSG 5223 University of Wisconsin - Madison 5242**  
 Research of the effect of synoptic scale processes in global circulation models modelling  
*Period Obligations*  
 01/16/78-11/30/85 FY85: \$70,000 TOTAL: \$459,803  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Herman, G. F. GSFC/Helfand, M. 31-Atmos Sci  
 GSFC/Kalnay, E.

**NAG 3-546 University of Wisconsin - Milwaukee 5243**  
 Study of Reynolds-stress closure model  
*Period Obligations*  
 06/01/84-05/30/86 FY85: \$15,583 TOTAL: \$29,848  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Amano, R. S. LERC/Vanoverbeke, T. 46-Mech Engr

**NAG 5-209 University of Wisconsin - Milwaukee 5244**  
 Hydro and biodynamics of the developing thermal front in Lake Michigan  
*Period Obligations*  
 09/15/81-09/30/84 FY85: TOTAL: \$18,422  
*Prin. Invest. NASA Tech. Officer CASE Category*  
 Mortimer, C. H. GSFC/Rao, D. B. 33-Oceanography

# **NASA'S UNIVERSITY PROGRAM** **WISCONSIN (Continued)**

**NAG 5-384 University of Wisconsin - Milwaukee 5245**  
Diagnostics of rainfall anomalies in northeast Brazil

Period	Obligations	
01/01/84-06/30/85	FY85:	TOTAL: \$70,644
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sikdar, D. N.	GSFC/Lau, W. K.	31-Atmos Sci

**NAG 1-454 University of Wyoming 5251**  
Delamination micromechanical analyses

Period	Obligations	
03/01/84-12/31/85	FY85: \$45,147	TOTAL: \$70,190
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Walrath, D. E.	LARC/Crews, J. H., Jr.	47-Materials Engr
Adams, D. F.	LARC/Johnston, N. J.	

**NCC 2-369 University of Wisconsin - Milwaukee 5246**  
Remote sensing of a biogeochemical cycle: The manganese cycle in a freshwater lake

Period	Obligations	
09/01/85-08/30/86	FY85: \$26,500	TOTAL: \$26,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nealson, K. H.	ARC/Lawless, J. G.	39-Env Sci, NEC
	ARC/Wrigley, R.	

**NAG 2-134 University of Wyoming 5252**  
The study of star formation and molecular cloud evolution using the Kuiper Airborne Observatory

Period	Obligations	
10/01/81-09/30/86	FY85: \$33,438	TOTAL: \$171,181
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Thronson, H. A., Jr.	ARC/Haughney, L. C.	11-Astronomy

**NCC 2-279 University of Wisconsin - Parkside 5247**  
Analysis design and testing of components assemblage and equipment installation of NASA Ames vestibular research facility

Period	Obligations	
01/01/84-01/31/86	FY85: \$20,000	TOTAL: \$40,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Feldt, W. T.	ARC/Mah, R. W.	46-Mech Engr
Eggert, D. M.	ARC/Kirk, P. J.	

**NAG 2-252 University of Wyoming 5253**  
A far-infrared study of galactic evolution using the Kuiper Airborne Observatory

Period	Obligations	
10/01/83-09/30/85	FY85: \$444	TOTAL: \$26,306
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, J.	ARC/Haughney, L. C.	11-Astronomy

**NAG 2-355 University of Wyoming 5254**  
Biochemical process in sagebrush steppe: Interaction of terrain, vegetation and chemical cycles

Period	Obligations	
06/01/85-11/30/87	FY85: \$188,065	TOTAL: \$188,065
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Reiners, W. A.	ARC/Matson, P. A.	59-Life Sci, NEC

## **WYOMING**

**NAG 1-272 University of Wyoming 5248**  
Application of the iospescu shear test method to woven composite materials

Period	Obligations	
05/01/82-05/31/85	FY85:	TOTAL: \$128,905
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Walrath, D. E.	LARC/Deaton, J. W.	41-Aero Engr
Coulter, B. A.	LARC/Dexter, H. B.	

**NAGW 430 University of Wyoming 5255**  
Balloonborne measurements of stratospheric condensation nuclei

Period	Obligations	
01/01/83-12/31/85	FY85: \$80,000	TOTAL: \$226,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hofmann, D. J.	HQ-EE/Schiffer, R. A.	31-Atmos Sci
Rosen, J. M.	HQ-EE/Thompson, D. E.	

**NAG 1-277 University of Wyoming 5249**  
Investigation of the relations between neat resin and advanced composite mechanical properties

Period	Obligations	
05/03/82-05/02/86	FY85: \$60,181	TOTAL: \$169,690
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zimmerman, R. S.	LARC/Johnston, N. J.	47-Materials Engr
Adams, D. F.	LARC/Hinkley, J. A.	

**NAGW 602 University of Wyoming 5256**  
Quantitative analysis of planetary reflectance spectra

Period	Obligations	
02/01/84-01/31/86	FY85: \$25,000	TOTAL: \$50,034
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Johnson, P. E.	HQ-EL/Boyce, J. M.	32-Geological Sci
	HQ-EL/Holt, H. E.	

**NAG 1-351 University of Wyoming 5250**  
Determining delamination resistance in fatigue utilizing the edge delamination test

Period	Obligations	
04/01/83-09/30/84	FY85:	TOTAL: \$93,044
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Odom, E. M.	LARC/O'brien, T. K.	41-Aero Engr
Zimmerman, R. S.	LARC/Johnston, N. J.	

**NAS 1-16305 University of Wyoming 5257**  
Science support for Earth radiation budget satellite/stratospheric aerosol and gas experiment

Period	Obligations	
06/27/80-08/31/86	FY85: \$64,258	TOTAL: \$281,800
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pepin, T. J.	LARC/McMaster, L. R.	31-Atmos Sci
	LARC/McCormick, M. P.	

# **NASA'S UNIVERSITY PROGRAM** **WYOMING (Continued)**

**NAS 1-17735**                      **University of Wyoming**                      **5258**  
Balloonborne aerosol measurements in support of SAGE II mission

<i>Period</i>	<i>Obligations</i>	
07/16/84-01/14/86	FY85: \$90,000	TOTAL: \$169,058
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hoffman, D. J.	LARC/Owens, T. L.	31-Atmos Sci
	LARC/McMaster, L. R.	

**NAS 2-11612**                      **University of Wyoming**                      **5259**  
Polymer matrix and graphite fiber study

<i>Period</i>	<i>Obligations</i>	
04/04/83-06/15/85	FY85:	TOTAL: \$114,390
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Adams, D. F.	ARC/Gilwee, W. J.	12-Chemistry
Odom, E. M.		

**NAS 5-27783**                      **University of Wyoming**                      **5260**  
Support services for the California coastal cloud experiment

<i>Period</i>	<i>Obligations</i>	
09/01/83-09/02/84	FY85:	TOTAL: \$24,949
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cooper, W. A.	GSFC/Simpson, J.	31-Atmos Sci

**NCA 2-880201**                      **University of Wyoming**                      **5261**  
An experimental model for biological hydrophobic interactions

<i>Period</i>	<i>Obligations</i>	
09/01/82-12/31/85	FY85: \$4,600	TOTAL: \$18,084
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Middaugh, C.	ARC/MacElroy, D.	51-Biological Sci

**NCA 2-880401**                      **University of Wyoming**                      **5262**  
Biogeochemical processes in sagebrush ecosystems variation with terrain

<i>Period</i>	<i>Obligations</i>	
06/01/84-05/31/85	FY85:	TOTAL: \$5,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Reiners, W. A.	ARC/Matson, P. A.	55-Agriculture Sci

## **PUERTO RICO**

**NAS 5-28746**                      **University of Puerto Rico**                      **5263**  
Biomass accumulation in secondary tropical forest in early successional stages

<i>Period</i>	<i>Obligations</i>	
07/18/85-11/17/88	FY85: \$117,300	TOTAL: \$117,300
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Waide, R. B.	GSFC/Oseroff, H.	39-Env Sci, NEC

## **AUSTRALIA**

**NAGW 499**                      **University of Queensland**                      **5264**  
Shock tunnel studies of scramjet phenomena

<i>Period</i>	<i>Obligations</i>	
10/01/83-09/30/84	FY85:	TOTAL: \$33,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stalker, R. J.	LARC/Anderson, G. Y.	41-Aero Engr
Morgan, R. G.	LARC/Beach, H. L., Jr.	

**NAGW 503**                      **University of Queensland**                      **5265**  
Radiation resistance of high performance polymers

<i>Period</i>	<i>Obligations</i>	
10/01/83-09/30/84	FY85:	TOTAL: \$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
O'donnell, J. H.	LARC/Sykes, G. F.	12-Chemistry

**NAGW 728**                      **University of Sydney**                      **5266**  
Further development and establishment of rarefied flow field analysis capability

<i>Period</i>	<i>Obligations</i>	
02/01/85-07/31/88	FY85: \$280,000	TOTAL: \$280,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bird, G. A.	LARC/Jones, J. J.	41-Aero Engr
	LARC/Moss, J. N.	

## **CANADA**

**NCA 2-103101**                      **Carleton University**                      **5267**  
An investigation of the effects of selected communications media on the performance of separated work teams

<i>Period</i>	<i>Obligations</i>	
09/01/81-08/31/84	FY85:	TOTAL: \$9,259
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
George, D. A.	ARC/Connors, M. M.	29-Math/Computer, NEC

**NAGW 429**                      **University of Toronto**                      **5268**  
Development of fuzzy set calculus for estimating pilot workload as a function of modes of operator behavior

<i>Period</i>	<i>Obligations</i>	
12/15/82-02/28/86	FY85:	TOTAL: \$91,567
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Moray, N.	ARC/Hart, S. G.	69-Psych, NEC

**NSG 7409**                      **University of Toronto**                      **5269**  
Application of the cubic strength criterion to the failure analysis of composite structures

<i>Period</i>	<i>Obligations</i>	
03/01/78-08/31/84	FY85:	TOTAL: \$97,320
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tennyson, R. C.	LARC/Baker, D. J.	47-Materials Engr
Yechout, T. R.	LARC/Dexter, H. B.	

**NASA'S UNIVERSITY PROGRAM  
CANADA (Continued)**

## NAGW 575 University of Waterloo 5270

Critical evaluation of the unsteady aerodynamics approach to dynamic stability at high angles of attack

Period	Obligations	
03/01/84-02/28/86	FY85:	TOTAL: \$18,156
Prin. Invest.	NASA Tech. Officer	CASE Category
Hui, W. H.	ARC/Tobak, M.	41-Aero Engr
	ARC/Chapman, G. I.	

## CHILE

NAS 5-1925                  University of Chile                  5271

Maintenance and operation of minitrack facilities

09/21/62-10/31/89	FY85: \$3,519,000	TOTAL: \$69,209,506
Prin. Invest.	NASA Tech. Officer	CASE Category
Diaz, E.	GSFC/Force, C. A.	99-Multi-Discip
	GSFC/Spintman. D.	

## GREAT BRITAIN

## NAGW 581 Imperial College of Science &amp; Technology 5272

## Vortex boundary layer interactions

<i>Period</i>	<i>Obligations</i>
03/01/84-02/28/86	FY85: \$36,780 TOTAL: \$76,780
<i>Prin. Invest</i>	<i>NASA Tech. Officer</i>
Bradshaw, P.	ARC/Peake, D. J.
	<i>CASE Category</i>
	41-Aero Engr

**NAGW 779                      University of Manchester                      5273**

Convective heat transfer in 180 degrees u-bend to aid turbulence modeling

<i>Period</i>	<i>Obligations</i>	
03/26/85-09/25/85	FY85: \$19,820	TOTAL: \$19,820
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Laundry, B. E.	LERC/Wang, C. R.	41-Aero Engr
	LERC/Sockol, P. M.	

## NAGW 478 University of Wales 5274

Finite element methods of analysis for high speed viscous compressible flow

<i>Period</i>	<i>Obligations</i>	
10/01/83-09/31/86	FY85: \$35,690	TOTAL: \$64,460
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Morgan, K.	LARC/Bey, K. S.	29-Math/Computer, NEC
Zienkiewicz, O. C.	LARC/Olsen, G. C.	

**NCCW 2                      University of Wales                      5275**

Computer program for buckling of stiffened composite panels with shear loading

Period	Obligations
10/01/81-01/31/86	FY85: TOTAL: \$63,200
Prin. Invest.	NASA Tech. Officer CASE Category
Williams, F. W.	LARC/Stroud, W. J. 41-Aero Engr
	LARC/Anderson, M. S.

## NSG 7172 University of Southampton 5276

Self-streamlining of the test section of a transonic wind tunnel

<i>Period</i>	<i>Obligations</i>	
10/01/75-12/31/85	FY85: \$38,400	TOTAL: \$419,556
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Goodyer, M. J.	LARC/Ladson, C. L.	41-Aero Engr
	LARC/Mineck, R. E.	

## NSG 7523 University of Southampton 5277

Investigations into the technology required to raise reliability levels of magnetic suspension system

<i>Period</i>	<i>Obligations</i>	
01/01/79-12/31/85	FY85: \$54,282	TOTAL: \$357,282
<i>Prin. Invest</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Goodyer, M. J.	LARC/Boyden, R. P.	41-Aero Engr
	LARC/Kilaore, R. A.	

**ISRAEL**

<b>NAGW 494</b>	<b>Israel Institute of Technology</b>	<b>5278</b>
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## Assessment of workload engineering

Period	Obligations
10/01/83-10/01/85	FY85: \$39,281 TOTAL: \$82,611
Prin. Invest.	NASA Tech. Officer CASE Category
Gopher, D.	ARC/Hart, S. G. 69-Psych. NEC

<b>NAGW 609</b>	<b>Israel Institute of Technology</b>	<b>5279</b>
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Computations of asymmetric supersonic flows around cones at large incidence

<i>Period</i>	<i>Obligations</i>	
05/01/84-04/30/86	FY85: \$13,850	TOTAL: \$23,600
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dogani, D.	ARC/Schiff, L. B.	41-Aero Engr
	ARC/Malcolm, G. N.	

## NCCW 4 Israel Institute of Technology 5280

### Model for medium range air combat analysis

Period	Obligations
11/01/84-10/31/85	FY85: \$25,000 TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer CASE Category
Shinar, J.	ARC/Ardema, M. D. 41-Aero Engr

# NASA'S UNIVERSITY PROGRAM

## APPENDIX

### CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

The Fields used here are specified by Amendment J, "Standard Classification of Fields of Science and Engineering," to Office of Management and Budget (OMB) Circular A-46, "Standards for Statistical Surveys." Field codes are interpreted as follows:

<b>PHYSICAL SCIENCES</b>	<b>ENVIRONMENTAL SCIENCES</b> (Terrestrial and extraterrestrial)	<b>LIFE SCIENCES</b>	<b>SOCIAL SCIENCES</b>
11 ASTRONOMY	31 ATMOSPHERIC SCIENCES	51 BIOLOGICAL SCIENCES	71 ANTHROPOLOGY
12 CHEMISTRY	32 GEOLOGICAL SCIENCES	54 ENVIRONMENTAL BIOLOGY	72 ECONOMICS
13 PHYSICS	33 OCEANOGRAPHY	55 AGRICULTURAL SCIENCES	73 HISTORY
19 PHYSICAL SCIENCES, NEC*	39 ENVIRONMENTAL SCIENCES, NEC*	56 MEDICAL SCIENCES	74 LINGUISTICS
		59 LIFE SCIENCES, NEC*	75 POLITICAL SCIENCE
			76 SOCIOLOGY
			79 SOCIAL SCIENCE, NEC*
<b>MATHEMATICAL/COMP SCI</b>	<b>ENGINEERING</b>	<b>PSYCHOLOGY</b>	<b>OTHER SCIENCES**</b>
21 MATHEMATICS	41 AERONAUTICAL	61 BIOLOGICAL	99 ALL DISCIPLINE(S)
22 COMPUTER SCIENCES	42 ASTRONAUTICAL	62 SOCIAL ASPECTS	
29 MATHEMATICAL COMPUTER SCIENCES, NEC*	43 CHEMICAL	69 PSYCHOLOGY, NEC*	
	44 CIVIL		
	45 ELECTRICAL		
	46 MECHANICAL		
	47 METALLURGY AND MATERIALS		
	49 ENGINEERING, NEC*		

\*Not Elsewhere Classified (For interdisciplinary projects and others not listed by discipline name)

\*\*For interdisciplinary projects which cannot be classified within any of the preceding main fields

Abbreviations used in the "Technical Officer Locations" column are discussed in the prefatory pages.

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
11	ALABAMA A&M UNIV	Darbro, W.	MSFC	George, M. C.	NAG 8-36	1005
11	ARIZONA STATE UNIV	Nishioka, K.	ARC	Levey, E. H.	NCC 2-348	1169
11	ARIZONA STATE UNIV	Kondo, Y.	GSFC	Cowley, A.	NAG 5-358	1141
11	ARIZONA STATE UNIV	Kondo, Y.	GSFC	Starrfield, S.	NAG 5-481	1143
11	ARIZONA STATE UNIV	Kondo, Y.	GSFC	Burstein, D.	NAG 5-547	1144
11	ARIZONA STATE UNIV	Williams, R. J.	JSC	Greeley, R.	NCC 9-14	1170
11	ARIZONA STATE UNIV	Owens, J. H.	MSFC	Wyckoff, S.	NAG 8-487	1145
11	ARIZONA STATE UNIV	Johnson, W. G.	MSFC	Burstein, D.	NAG 8-505	1146
11	ARIZONA STATE UNIV	Brinton, H. C.	HQ-EL	Wyckoff, S.	NAGW 547	1158
11	ARIZONA STATE UNIV	Vescelus, F.	HQ-EL	Christensen, P. R.	NASW 4021	1160
11	JOHNS HOPKINS UNIV	Haughney, L. C.	ARC	Weaver, H. A., Jr.	NAG 2-356	2889
11	JOHNS HOPKINS UNIV	Boggess, A.	GSFC	Moos, H. W.	NAG 5-327	2892
11	JOHNS HOPKINS UNIV	Kondo, Y.	GSFC	Durrance, S. T.	NAG 5-435	2894
11	JOHNS HOPKINS UNIV	Kondo, Y.	GSFC	Blair, W. P.	NAG 5-701	2898
11	JOHNS HOPKINS UNIV	Kondo, Y.	GSFC	Moos, H. W.	NSG 5393	2920
11	JOHNS HOPKINS UNIV	Owens, J. H.	MSFC	Davidson, A.	NAS 5-27000	2910
11	JOHNS HOPKINS UNIV	O'dell, C. R.	MSFC	Fastie, W. G.	NAS 8-32903	2911
11	JOHNS HOPKINS UNIV	Humphreys, J. T.	MSFC	Fastie, W. G.	NAS 8-35348	2912
11	JOHNS HOPKINS UNIV	Brunk, W. E.	HQ-EL	Brown, R. A.	NAGW 383	2901
11	JOHNS HOPKINS UNIV	Stencel, R. E.	HQ-EZ	Kargon, R. H.	NASW 3691	2915
11	BAYLOR UNIVERSITY	Brunk, W. E.	HQ-EL	Alexander, W. M.	NASW 3577	4562
11	BELOIT COLLEGE	O'dell, C. R.	MSFC	Schroeder, D. J.	NAS 8-32901	5170
11	BOSTON COLLEGE	Barnes, A.	ARC	Feynman, J.	NCC 2-185	3046
11	BOSTON UNIVERSITY	Kondo, Y.	GSFC	Smith, G.	NAG 5-462	3049
11	BOSTON UNIVERSITY	Wales, R. O.	GSFC	Hughes, W.	NAG 5-564	3051
11	BOSTON UNIVERSITY	Stone, J. F.	MSFC	Marscher, A. P.	NAG 8-455	3053
11	BOSTON UNIVERSITY	Johnson, W. G.	MSFC	Brecher, K.	NAG 8-467	3054
11	BOSTON UNIVERSITY	Johnson, W. G.	MSFC	Marscher, A. P.	NAG 8-518	3055
11	BOSTON UNIVERSITY	Johnson, W. G.	MSFC	Marscher, A. P.	NAG 8-537	3056
11	BOSTON UNIVERSITY	Devincenzi, D. L.	HQ-EB	Papagiannis, M. D.	NAGW 597	3058
11	BOWLING GRN STATE U	Kondo, Y.	GSFC	Stoner, R. E.	NAG 5-331	4025
11	BOWLING GRN STATE U	Kondo, Y.	GSFC	Ptak, R.	NAG 5-439	4026

# NASA'S UNIVERSITY PROGRAM

## APPENDIX - CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
11	CALIF INST OF TECH	Haughney, L. C.	ARC	Phillips, T. G.	NAG 2-1	1313
11	CALIF INST OF TECH	Fimmel, R. O.	ARC	Yung, Y. L.	NAG 2-267	1315
11	CALIF INST OF TECH	Werner, M. W.	ARC	Neugebauer, G.	NCA 2-90201	1361
11	CALIF INST OF TECH	Werner, M. W.	ARC	Neugebauer, G.	NCA 2-90401	1362
11	CALIF INST OF TECH	Kondo, Y.	GSFC	Sargent, W. L.	NAG 5-4	1319
11	CALIF INST OF TECH	Kondo, Y.	GSFC	Trauger, J. T.	NAG 5-66	1320
11	CALIF INST OF TECH	Kondo, Y.	GSFC	Oke, J. B.	NAG 5-250	1321
11	CALIF INST OF TECH	Kondo, Y.	GSFC	Moore, R. L.	NAG 5-337	1323
11	CALIF INST OF TECH	White, R. A.	GSFC	Westphal, J.	NAS 5-25451	1351
11	CALIF INST OF TECH	Wales, R. O.	GSFC	Stone, E. C.	NAS 5-25789	1352
11	CALIF INST OF TECH	Wales, R. O.	GSFC	Stone, E. C.	NAS 5-28441	1355
11	CALIF INST OF TECH	Stone, J. F.	MSFC	Zirin, H.	NAG 8-438	1325
11	CALIF INST OF TECH	Johnson, W. G.	MSFC	Zirin, H.	NAG 8-460	1326
11	CALIF INST OF TECH	Johnson, W. G.	MSFC	Stone, E. C.	NAG 8-502	1327
11	CALIF INST OF TECH	Johnson, W. G.	MSFC	Oke, J. B.	NAG 8-539	1328
11	CALIF INST OF TECH	Stone, J. F.	MSFC	Stone, E. C.	NAS 8-27978	1357
11	CALIF INST OF TECH	Brinton, H. C.	HQ-EL	Muhleman, D. O.	NGL 05-002-003	1365
11	CALIF INST OF TECH	Brinton, H. C.	HQ-EL	Soifer, B. T.	NGL 05-002-140	1369
11	CALIF INST OF TECH	Brinton, H. C.	HQ-EL	Muhleman, D. O.	NGR 05-002-114	1371
11	CALIF INST OF TECH	Boggess, N. W.	HQ-EZ	Phillips, T. G.	NAGW 107	1335
11	CALIF INST OF TECH	Weiler, E. J.	HQ-EZ	Westphal, J.	NAGW 640	1349
11	CALIF INST OF TECH	Spicer, D. S.	HQ-EZ	Zirin, H.	NGL 05-002-034	1366
11	CALIF INST OF TECH	Weiler, E. J.	HQ-EZ	Oke, J. B.	NGL 05-002-134	1368
11	CALIF INST OF TECH	Ormes, J. F.	HQ-EZ	Stone, E. C.	NGR 05-002-160	1372
11	CASE WESTERN RESERVE	Cline, T. L.	HQ-EZ	Frye, G. M., Jr.	NAGW 451	4097
11	CATHOLIC UNIVERSITY	Kondo, Y.	GSFC	Bruhweiler, F. C.	NAG 5-296	2252
11	CATHOLIC UNIVERSITY	Hallam, K. L.	GSFC	Bruhweiler, F. C.	NAG 5-596	2255
11	CATHOLIC UNIVERSITY	Trombka, J. I.	GSFC	Wernitz, C. W.	NSG 5066	2259
11	CITADEL MLTRY CO S C	Kondo, Y.	GSFC	Adelman, S. J.	NAG 5-218	4492
11	CITY COLLEGE OF N Y	Thaddeus, P.	GSFC	Arons, M.	NGL 33-013-040	3699
11	COLUMBIA UNIVERSITY	Early, L. J.	GSFC	Novick, R.	NGR 33-008-102	3752
11	COLUMBIA UNIVERSITY	Johnson, W. G.	MSFC	Novick, R.	NAG 8-497	3726
11	COLUMBIA UNIVERSITY	Johnson, W. G.	MSFC	Patterson, J.	NAG 8-513	3727
11	COLUMBIA UNIVERSITY	Stone, J. F.	MSFC	Agrawala, A. K.	NAS 8-30753	3740
11	COLUMBIA UNIVERSITY	Kaluzienski, L. J.	HQ-EZ	Shaham, J.	NAGW 567	3730
11	COLUMBIA UNIVERSITY	Stencel, R. E.	HQ-EZ	Flynn, G.	NSG 7105	3754
11	CORNELL UNIVERSITY	Haughney, L. C.	ARC	Houck, J. R.	NAG 2-207	3760
11	CORNELL UNIVERSITY	Ramos, R.	ARC	Houck, J. R.	NAG 2-317	3763
11	CORNELL UNIVERSITY	Haughney, L. C.	ARC	Harwit, M. O.	NSG 2347	3809
11	CORNELL UNIVERSITY	Haughney, L. C.	ARC	Beckwith, S.	NSG 2412	3811
11	CORNELL UNIVERSITY	Johnson, W. G.	MSFC	Haynes, M. P.	NAG 8-471	3774
11	CORNELL UNIVERSITY	Lynch, J. T.	HQ-EE	Farley, D. T.	NGR 33-010-161	3803
11	CORNELL UNIVERSITY	Brinton, H. C.	HQ-EL	Ostro, S. J.	NAGW 116	3778
11	CORNELL UNIVERSITY	Brinton, H. C.	HQ-EL	Burns, J. A.	NAGW 521	3783
11	CORNELL UNIVERSITY	Kaluzienski, L. J.	HQ-EZ	Salpeter, E. E.	NAGW 666	3788
11	CORNELL UNIVERSITY	Owens, F. C.	HQ-LE	Nicholson, P. D.	NGT 33-010-804	3808
11	DARTMOUTH COLLEGE	Kondo, Y.	GSFC	Wegner, G. A.	NAG 5-287	3577
11	DUKE UNIVERSITY	Stencel, R. E.	HQ-EZ	Herbst, E.	NAGW 189	3960
11	GEORGIA STATE UNIV	Kondo, Y.	GSFC	Miller, H. R.	NAG 5-242	2454
11	HARVARD UNIVERSITY	Stone, J. F.	MSFC	Rosner, R.	NAG 8-445	3075
11	HARVARD UNIVERSITY	Johnson, W. G.	MSFC	Rosner, R.	NAG 8-459	3076
11	HARVARD UNIVERSITY	Johnson, W. G.	MSFC	Rosner, R.	NAG 8-533	3077
11	HARVARD UNIVERSITY	Butler, D. M.	HQ-EE	Rosner, R.	NAGW 79	3081
11	HARVARD UNIVERSITY	Butler, D. M.	HQ-EE	McElroy, M. B.	NAGW 359	3082
11	HARVARD UNIVERSITY	Rosendhal, J. D.	HQ-EP	Shapiro, I. I.	NSG 7176	3105
11	HARVARD UNIVERSITY	Kaluzienski, L. J.	HQ-EZ	Grindlay, J.	NAGW 624	3086
11	HARVARD UNIVERSITY	Kaluzienski, L. J.	HQ-EZ	Cameron, A. G.	NGR 22-007-272	3101
11	HARVARD UNIVERSITY	Stencel, R. E.	HQ-EZ	Parkinson, W. H.	NSG 7304	3106
11	HOWARD UNIVERSITY	Haughney, L. C.	ARC	Richard, L. J.	NAG 2-78	2295
11	HOWARD UNIVERSITY	Stencel, R. E.	HQ-EZ	Peery, B. F.	NAGW 545	2304

# NASA'S UNIVERSITY PROGRAM

## APPENDIX - CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
11	INDIANA U-BLOOMINGTN	Cuzzi, J. N.	ARC	Durisen, R. H.	NCA 2-335401	2649
11	INDIANA U-BLOOMINGTN	Augason, G. C.	ARC	Johnson, H. R.	NCA 2-335402	2650
11	INDIANA U-BLOOMINGTN	Kondo, Y.	GSFC	Johnson, H. R.	NAG 5-182	2642
11	INDIANA U-BLOOMINGTN	Kondo, Y.	GSFC	Mufson, S. L.	NAG 5-198	2643
11	INDIANA U-BLOOMINGTN	Kondo, Y.	GSFC	Honeycutt, R. K.	NAG 5-347	2644
11	INDIANA U-BLOOMINGTN	Kondo, Y.	GSFC	Eaton, J. A.	NAG 5-431	2645
11	INDIANA U-BLOOMINGTN	Kondo, Y.	GSFC	Eaton, J.	NAG 5-599	2646
11	INDIANA U-BLOOMINGTN	Johnson, W. G.	MSFC	Mufson, S. L.	NAG 8-472	2647
11	IOWA STATE UNIV	Kondo, Y.	GSFC	Neff, J.	NAG 5-544	2738
11	IOWA STATE UNIV	Kondo, Y.	GSFC	Willson, L. A.	NAG 5-707	2740
11	IOWA STATE UNIV	Stone, J. F.	MSFC	Lamb, R. C.	NAG 8-360	2741
11	JACKSON STATE UNIV	Stencel, R. E.	HQ-EZ	Hale, B.	NAGW 502	3472
11	LEHIGH UNIVERSITY	Kondo, Y.	GSFC	McCluskey, G. E.	NSG 5386	4364
11	LA ST U&A&M COL-BRGE	Kondo, Y.	GSFC	Drilling, J. S.	NAG 5-71	2850
11	LA ST U&A&M COL-BRGE	Kondo, Y.	GSFC	Weaver, A. C.	NAG 5-197	2851
11	LA ST U&A&M COL-BRGE	Stencel, R. E.	HQ-EZ	Henry, R. J.	NAGW 481	2854
11	LA ST U&A&M COL-BRGE	Cline, T. L.	HQ-EZ	Wefel, J. P.	NAGW 550	2855
11	MASS INST OF TECH	Craig, R. A.	ARC	Pettingill, G. H.	NAS 2-9473	3206
11	MASS INST OF TECH	Haughney, L. C.	ARC	Elliot, J. L.	NSG 2342	3264
11	MASS INST OF TECH	Kondo, Y.	GSFC	Tremaine, S. D.	NAG 5-248	3160
11	MASS INST OF TECH	Kondo, Y.	GSFC	Urry, C. M.	NAG 5-495	3170
11	MASS INST OF TECH	Wales, R. O.	GSFC	Lazarus, A. J.	NAG 5-584	3177
11	MASS INST OF TECH	Wales, R. O.	GSFC	Bridge, H. S.	NAS 5-25790	3211
11	MASS INST OF TECH	Wales, R. O.	GSFC	Bridge, H. S.	NAS 5-28440	3218
11	MASS INST OF TECH	Ogilvie, K.	GSFC	Lazarus, A. J.	NAS 5-28726	3220
11	MASS INST OF TECH	Morgan, S. H.	GSFC	Burke, B. F.	NAS 8-34545	3226
11	MASS INST OF TECH	Early, L. J.	GSFC	Rappaport, S. A.	NGR 22-009-730	3256
11	MASS INST OF TECH	Kessler, D.	JSC	Taff, L. G.	NAS 9-17138	3236
11	MASS INST OF TECH	Corrigan, R. D.	LERC	Keith, T. G.	NAS 8-27975	3224
11	MASS INST OF TECH	Johnson, W. G.	MSFC	Bradt, H. V.	NAG 8-493	3179
11	MASS INST OF TECH	Johnson, W. G.	MSFC	Clark, G. W.	NAG 8-494	3180
11	MASS INST OF TECH	Johnson, W. G.	MSFC	Lewin, W. H.	NAG 8-495	3181
11	MASS INST OF TECH	Johnson, W. G.	MSFC	Markert, T. H.	NAG 8-517	3182
11	MASS INST OF TECH	Daily, C. C.	MSFC	Canizares, C. R.	NAG 8-525	3183
11	MASS INST OF TECH	Johnson, W. G.	MSFC	Bradt, H.	NAG 8-531	3184
11	MASS INST OF TECH	Stone, J. F.	MSFC	Bradt, H. V.	NAS 8-27972	3223
11	MASS INST OF TECH	Stone, J. F.	MSFC	Clark, G. W.	NAS 8-30752	3225
11	MASS INST OF TECH	Nein, M. E.	MSFC	Burke, B. F.	NAS 8-36113	3231
11	MASS INST OF TECH	Rosendhal, J. D.	HQ-E	Pettengill, G. H.	NGL 22-009-638	3249
11	MASS INST OF TECH	Brunk, W. E.	HQ-EL	Taff, L. G.	NAGW 232	3189
11	MASS INST OF TECH	Brinton, H.	HQ-EL	Staelin, D.	NAGW 373	3190
11	MASS INST OF TECH	Brinton, H. C.	HQ-EL	Jewitt, D. C.	NAGW 770	3204
11	MASS INST OF TECH	Brinton, H. C.	HQ-EL	Pettengill, G. H.	NGR 22-009-672	3254
11	MASS INST OF TECH	Brinton, H. C.	HQ-EL	Elliot, J. L.	NSG 7526	3273
11	MASS INST OF TECH	Kaluzienski, L. J.	HQ-EZ	Clark, G. W.	NAGW 442	3193
11	MASS INST OF TECH	Boggess, N. W.	HQ-EZ	Weiss, R.	NGR 22-009-526	3253
11	MASS INST OF TECH	Kaluzienski, L. J.	HQ-EZ	Ricker, G. R.	NSG 7339	3272
11	MASS INST OF TECH	Kaluzienski, L. J.	HQ-EZ	Clark, G. W.	NSG 7643	3276
11	MASS INST OF TECH	Owens, F. C.	HQ-LE	Shapiro, I. I.	NGT 22-009-904	3259
11	MICHIGAN STATE UNIV	Kondo, Y.	GSFC	Baird, S. R.	NAG 5-291	3328
11	MICHIGAN STATE UNIV	Kondo, Y.	GSFC	Lien, D. J.	NAG 5-440	3329
11	MICHIGAN STATE UNIV	Kondo, Y.	GSFC	Linell, A.	NAG 5-460	3330
11	MICHIGAN TECH UNIV	Johnson, W. G.	MSFC	Kriss, G. A.	NAG 8-479	3347
11	MIDDLEBURY COLLEGE	Johnson, W. G.	MSFC	Winkler, P. F., Jr.	NAG 8-389	4859
11	MISSISSIPPI STATE U	Parker, G. A.	MSFC	Ingels, F. M.	NAS 8-33570	3477
11	MORGAN STATE UNIV	Baker, G. R.	GSFC	Hammond, E. C., Jr.	NSG 5074	2927
11	NEW MEX INST MINING	Caroff, L. J.	ARC	Eilek, J. A.	NCA 2-511301	3666
11	NEW MEX INST MINING	Caroff, L. J.	ARC	Eilek, J. A.	NCC 2-364	3669
11	NEW MEX INST MINING	Kondo, Y.	GSFC	Gibson, D. M.	NAG 5-432	3660
11	NEW MEX INST MINING	Niedner, M.	GSFC	Moore, E.	NCA 5-69	3667

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## APPENDIX - CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
11	NEW MEX INST MINING	Niedier, M.	GSFC	Holmes, C. R.	NCA 5-71	3668
11	NEW MEX INST MINING	Johnson, W. G.	MSFC	Gibson, D. M.	NAG 8-473	3661
11	NEW MEX INST MINING	Johnson, W. G.	MSFC	Gibson, D. M.	NAG 8-512	3662
11	NEW MEX ST U-LAS CR	Brunk, W. E.	HQ-EL	Fortin, P. E.	NGL 32-003-001	3680
11	NEW MEX ST U-LAS CR	Ormes, J. F.	HQ-EZ	Golden, R. L.	NAGW 110	3670
11	NEW YORK UNIVERSITY	Kondo, Y.	GSFC	Glassgold, A. E.	NAG 5-73	3827
11	NEW YORK UNIVERSITY	Johnson, W. G.	MSFC	Bregman, J. N.	NAG 8-449	3830
11	NEW YORK UNIVERSITY	Butler, D. M.	HQ-EE	Strauss, H.	NAGW 781	3833
11	NEW YORK UNIVERSITY	Stencel, R. E.	HQ-EZ	Glassgold, A. E.	NAGW 630	3832
11	NORTHWESTERN UNIV	Early, L. J.	GSFC	Ulmer, M. P.	NAG 5-181	2525
11	OHIO STATE UNIV	Kondo, Y.	GSFC	Slettebak, A.	NAG 5-52	4174
11	OHIO STATE UNIV	Kondo, Y.	GSFC	Ferland, G. J.	NAG 5-573	4176
11	OHIO STATE UNIV	Kondo, Y.	GSFC	Wing, R. F.	NSG 5368	4192
11	PENN STATE U-UNIV PK	Early, L. J.	GSFC	Garmire, G. P.	NAG 5-100	4377
11	PENN STATE U-UNIV PK	Kondo, Y.	GSFC	Weedman, D. W.	NAG 5-334	4380
11	PENN STATE U-UNIV PK	Kondo, Y.	GSFC	Nousek, J. A.	NAG 5-335	4381
11	PENN STATE U-UNIV PK	Klinglesmith, D. A.	GSFC	Usher, P. D.	NAG 5-361	4382
11	PENN STATE U-UNIV PK	Kondo, Y.	GSFC	Huenemoerder, D. P.	NAG 5-405	4384
11	PENN STATE U-UNIV PK	Kondo, Y.	GSFC	Ramsey, L. W.	NAG 5-563	4385
11	PENN STATE U-UNIV PK	Kondo, Y.	GSFC	Weedman, D.	NAG 5-590	4386
11	PENN STATE U-UNIV PK	Bullock, G. D.	GSFC	Garmire, G.	NAS 5-26809	4397
11	PENN STATE U-UNIV PK	Johnson, W. G.	MSFC	Feigelson, E. D.	NAG 8-457	4389
11	PENN STATE U-UNIV PK	Johnson, W. G.	MSFC	Nousek, J.	NAG 8-478	4390
11	PENN STATE U-UNIV PK	Johnson, W. G.	MSFC	Feigelson, E. D.	NAG 8-507	4391
11	PENN STATE U-UNIV PK	Dailey, C. C.	MSFC	Garmire, G. P.	NAG 8-526	4392
11	PRINCETON UNIVERSITY	Locke, M.	GSFC	Groth, E. J.	NAS 5-25084	3635
11	PRINCETON UNIVERSITY	Cyphers, H.	GSFC	Jenkins, E. B.	NAS 5-26268	3636
11	PRINCETON UNIVERSITY	Mather, J.	GSFC	Wilkinson, D. T.	NAS 5-27590	3637
11	PRINCETON UNIVERSITY	Locke, M.	GSFC	Groth, E. J.	NAS 5-29142	3638
11	PRINCETON UNIVERSITY	Kondo, Y.	GSFC	Jenkins, E. B.	NSG 5248	3645
11	PRINCETON UNIVERSITY	Weiler, E. J.	HQ-EZ	York, D.	NAGW 10	3625
11	PRINCETON UNIVERSITY	Boggess, N. W.	HQ-EZ	Wilkinson, D.	NAGW 445	3627
11	PRINCETON UNIVERSITY	Stencel, R. E.	HQ-EZ	Rogerson, J. B., Jr.	NAGW 477	3628
11	PRINCETON UNIVERSITY	Stencel, R. E.	HQ-EZ	Turner, E.	NAGW 626	3630
11	PRINCETON UNIVERSITY	Stencel, R. E.	HQ-EZ	Ostriker, J. P.	NAGW 765	3631
11	PRINCETON UNIVERSITY	Stenal, R. E.	HQ-EZ	Draine, B. T.	NGL 31-001-007	3640
11	PRINCETON UNIVERSITY	Weiler, E. J.	HQ-EZ	Bahcall, N. A.	NSG 7256	3646
11	PRINCETON UNIVERSITY	Boggess, N. W.	HQ-EZ	Wilkinson, D. T.	NSG 7302	3647
11	PRINCETON UNIVERSITY	Weiler, E. J.	HQ-EZ	Jenkins, E. B.	NSG 7618	3648
11	PURDUE UNIVERSITY	Fimmel, R. O.	ARC	Morgan, P.	NAG 2-330	2668
11	RENSSELAER POLY-NY	Brinton, H. C.	HQ-EL	Ferris, J. P.	NAGW 476	3861
11	RICE UNIVERSITY	Kondo, Y.	GSFC	Dufour, R. J.	NAG 5-262	4582
11	RICE UNIVERSITY	Browne, I. D.	JSC	Clayton, D. D.	NAG 9-100	4586
11	RICE UNIVERSITY	Parker, R. A.	JSC	Dufour, R. J.	NAS 9-16596	4597
11	RICE UNIVERSITY	Owens, J. H.	MSFC	O'dell, C. R.	NAG 8-485	4584
11	RICE UNIVERSITY	Rosendhal, J. D.	HQ-E	Michel, F. C.	NAGW 379	4591
11	RICE UNIVERSITY	Stencel, R. E.	HQ-EZ	O'dell, C. R.	NAGW 384	4592
11	ROCHESTER INST TECH	Stencel, R. E.	HQ-EZ	Leung, C. M.	NAGW 577	3867
11	RUTGERS ST U-N BRNSK	Browne, I. D.	JSC	Herzog, G. F.	NAG 9-26	3651
11	RUTGERS ST U-N BRNSK	Stone, J. F.	MSFC	Matilsky, T.	NAG 8-454	3650
11	SAN DIEGO STATE UNIV	Worucki, W. J.	ARC	Young, A. T.	NCA 2-4	1432
11	SAN DIEGO STATE UNIV	Borucki, W. J.	ARC	Young, A. T.	NCC 2-300	1433
11	SAN DIEGO STATE UNIV	Kondo, Y.	GSFC	Dawson, D. W.	NAG 5-463	1426
11	SAN DIEGO STATE UNIV	Stencel, R. E.	HQ-EZ	Lee, L.	NAGW 319	1430
11	SAN FRAN STATE UNIV	Valero, F. P.	ARC	Marcy, G. W.	NCA 2-44	1436
11	STANFORD UNIVERSITY	Erickson, E.	ARC	Petrosian, V.	NCA 2-14	1557
11	STANFORD UNIVERSITY	Werner, M. W.	ARC	Walker, A. B.	NCA 2-745207	1573
11	STANFORD UNIVERSITY	Erickson, E. F.	ARC	Petrosian, V.	NCA 2-745304	1576
11	STANFORD UNIVERSITY	Lemke, L. G.	ARC	Powell, J. D.	NCA 2-745407	1590
11	STANFORD UNIVERSITY	Werner, M. W.	ARC	Walker, A. B.	NCA 2-745412	1595



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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
11	STANFORD UNIVERSITY	Barnes, A.	ARC	Vesecky, J. F.	NCA 2-745503	1599
11	STANFORD UNIVERSITY	Bullock, G. D.	GSFC	Nelliwek, R. A.	NAS 5-25688	1540
11	STANFORD UNIVERSITY	Wales, R. O.	GSFC	Helliwell, R. A.	NAS 5-25744	1541
11	STANFORD UNIVERSITY	Hartman, R. C.	GSFC	Hofstadter, R.	NAS 5-26682	1542
11	STANFORD UNIVERSITY	Hartman, R. C.	GSFC	Hofstadter, R.	NAS 5-27557	1543
11	STANFORD UNIVERSITY	Johnson, W. G.	MSFC	Fairbank, W. M.	NAG 8-490	1522
11	STANFORD UNIVERSITY	Fescelus, F.	HQ-EL	Tyler, G. L.	NASW 3981	1555
11	STANFORD UNIVERSITY	Stencel, R. E.	HQ-EZ	Wagoner, R. V.	NAGW 299	1527
11	STANFORD UNIVERSITY	Weiler, E.	HQ-EZ	Timothy, J. G.	NAGW 551	1532
11	STANFORD UNIVERSITY	Kaluzienski, L. J.	HQ-EZ	Petrosian, V.	NAGW 646	1537
11	STANFORD UNIVERSITY	Weiler, E.	HQ-EZ	Timothy, J. G.	NASW 3935	1554
11	STANFORD UNIVERSITY	Spicer, D. S.	HQ-EZ	Walker, A. B.	NGR 05-020-559	1645
11	STANFORD UNIVERSITY	Kaluzienski, L. J.	HQ-EZ	Sturrock, P. A.	NGR 05-020-668	1647
11	STANFORD UNIVERSITY	Spicer, D. S.	HQ-EZ	Petrosian, V.	NSG 7092	1658
11	STATE U NY-BINGHAMTN	Owens, F. C.	HQ-LE	Goel, N. S.	NGT 33-188-805	3896
11	STATE U NY-STONY BRK	Kondo, Y.	GSFC	Caldwell, J.	NAG 5-275	3911
11	STATE U NY-STONY BRK	Kondo, Y.	GSFC	Hardorp, J.	NAG 5-555	3912
11	STATE U NY-STONY BRK	O'dell, C. R.	MSFC	Caldwell, J. J.	NAS 8-32904	3923
11	STATE U NY-STONY BRK	Brinton, H. C.	HQ-EL	Owen, T. C.	NGR 33-015-141	3930
11	STATE U NY-STONY BRK	Brinton, H. C.	HQ-EL	Knacke, R. F.	NSG 7286	3936
11	STATE U NY-STONY BRK	Brunk, W. E.	HQ-EL	Caldwell, J. J.	NSG 7320	3937
11	STATE U NY-STONY BRK	Owens, F. C.	HQ-LE	Knacke, R.	NGT 33-015-803	3933
11	TUFTS UNIVERSITY	Kondo, Y.	GSFC	Lang, K. R.	NAG 5-477	3280
11	UNIV ALA-HUNTSVILLE	Parnell, T. A.	MSFC	Gregory, J. C.	NAS 8-35667	1087
11	UNIV ALA-HUNTSVILLE	Parnell, T. A.	MSFC	Gregory, J. C.	NAS 8-36191	1093
11	UNIV ALASKA-FAIRBNKS	Wales, R. O.	GSFC	Akasofu, S.	NAG 5-571	1114
11	UNIV OF ARIZONA	Black, D. C.	ARC	McMillan, R. S.	NAG 2-52	1180
11	UNIV OF ARIZONA	Melugin, R.	ARC	Angel, J. R.	NAG 2-161	1182
11	UNIV OF ARIZONA	Haughney, L. C.	ARC	Huebert, B. J.	NAG 2-206	1183
11	UNIV OF ARIZONA	Fimmel, R. O.	ARC	Kumar, X. S.	NAG 2-263	1185
11	UNIV OF ARIZONA	McCreight, C. R.	ARC	Lebofsky, M. J.	NAG 2-290	1186
11	UNIV OF ARIZONA	Ramos, R.	ARC	Low, F. J.	NAG 2-319	1187
11	UNIV OF ARIZONA	Ramos, R.	ARC	Rieke, G.	NAG 2-320	1188
11	UNIV OF ARIZONA	Haughney, L. C.	ARC	Rieke, M.	NAS 2-10890	1255
11	UNIV OF ARIZONA	Fimmel, R. O.	ARC	Tomasko, M. G.	NAS 2-11647	1256
11	UNIV OF ARIZONA	Hollenbach, D. J.	ARC	Woolf, N.	NCA 2-40401	1276
11	UNIV OF ARIZONA	Black, D. C.	ARC	Gehrels, T.	NCA 2-40402	1277
11	UNIV OF ARIZONA	Werner, M. W.	ARC	Watts, R. N.	NCA 2-40403	1278
11	UNIV OF ARIZONA	Gull, T. R.	GSFC	Craine, E. R.	NAG 5-34	1195
11	UNIV OF ARIZONA	Kondo, Y.	GSFC	Liebert, J.	NAG 5-38	1196
11	UNIV OF ARIZONA	Kondo, Y.	GSFC	Puetter, R. C.	NAG 5-264	1198
11	UNIV OF ARIZONA	Kondo, Y.	GSFC	Holberg, J. A.	NAG 5-411	1201
11	UNIV OF ARIZONA	Knodo, Y.	GSFC	Polidan, R. S.	NAG 5-418	1202
11	UNIV OF ARIZONA	Kondo, Y.	GSFC	Malkan, M.	NAG 5-427	1203
11	UNIV OF ARIZONA	Kondo, Y.	GSFC	Holbert, J. B.	NAG 5-434	1204
11	UNIV OF ARIZONA	Kondo, Y.	GSFC	Polidan, R. S.	NAG 5-441	1205
11	UNIV OF ARIZONA	Kondo, Y.	GSFC	Schmidt, G. D.	NAG 5-545	1207
11	UNIV OF ARIZONA	Kondo, Y.	GSFC	Shemansky, D.	NAG 5-560	1208
11	UNIV OF ARIZONA	Kondo, Y.	GSFC	McAlary, C. W.	NAG 5-588	1209
11	UNIV OF ARIZONA	Kondo, Y.	GSFC	Wade, R. A.	NAG 5-703	1211
11	UNIV OF ARIZONA	Vitagliano, H. D.	GSFC	Weymann, R. J.	NAS 5-25733	1258
11	UNIV OF ARIZONA	Arens, J. F.	GSFC	Low, F. J.	NAS 5-26575	1259
11	UNIV OF ARIZONA	Johnson, W. G.	MSFC	Stocke, J. T.	NAG 8-442	1212
11	UNIV OF ARIZONA	Rosendhal, J. D.	HQ-E	Angel, J. R.	NAGW 121	1218
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Drummond, J. D.	NAGW 224	1222
11	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Larson, S. M.	NAGW 247	1224
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Zellner, B. H.	NAGW 414	1229
11	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Broadfoot, A. L.	NAGW 492	1232
11	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Hunter, D. M.	NAGW 596	1240
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Gehrels, T.	NASW 3454	1267

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Hsieh, K. C.	NASW 3627	1268
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Gehrels, T.	NASW 3655	1269
11	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Smith, B. A.	NGL 03-002-002	1281
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Gehrels, T.	NGL 03-002-081	1282
11	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Hubbard, W. B.	NSG 7045	1298
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-EL	Fink, U. W.	NSG 7070	1299
11	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Lebofsky, L. A.	NSG 7114	1301
11	UNIV OF ARIZONA	Boggess, N. W.	HQ-EZ	Lebofsky, G. J.	NAGW 520	1234
11	UNIV OF ARIZONA	Stencel, R. E.	HQ-EZ	Holberg, J.	NAGW 587	1239
11	UNIV OF ARIZONA	Stencel, R. E.	HQ-EZ	White, S. D.	NAGW 763	1252
11	UNIV OF ARIZONA	Stencel, R. E.	HQ-EZ	McGraw, J. T.	NAGW 804	1253
11	UNIV OF ARIZONA	Boggess, N. W.	HQ-EZ	Low, F. J.	NASW 3703	1270
11	UNIV OF ARIZONA	Boggess, N. W.	HQ-EZ	Low, F. J.	NGR 03-002-269	1284
11	UNIV OF ARIZONA	Boggess, N. W.	HQ-EZ	Hoffmann, W. F.	NGR 03-002-371	1286
11	UNIV OF ARIZONA	Ormes, J. F.	HQ-EZ	Jokipii, J. R.	NSG 7101	1300
11	UNIV OF ARIZONA	Owens, F. C.	HQ-LE	Lewis, J. S.	NGT 03-002-803	1290
11	UNIV OF ARIZONA	Owens, F. C.	HQ-LE	Smith, B. A.	NGT 03-002-804	1291
11	UNIV OF ARIZONA	Owens, F. C.	HQ-LE	Lebofsky, M. J.	NGT 03-002-805	1292
11	UNIV OF ARIZONA	Owens, F. C.	HQ-LE	Rieke, G.	NGT 03-002-807	1294
11	UNIV OF ARIZONA	Owens, F. C.	HQ-LB	Larson, H. P.	NGT 03-002-801	1288
11	UNIV CALIF-BERKELEY	Haughney, L. C.	ARC	McKee, C. F.	NAG 2-200	1659
11	UNIV CALIF-BERKELEY	Haughney, L. C.	ARC	Townes, C. H.	NAG 2-208	1660
11	UNIV CALIF-BERKELEY	Haughney, L. C.	ARC	Betz, A. L.	NAG 2-254	1662
11	UNIV CALIF-BERKELEY	Haughney, L. C.	ARC	Cohen, M.	NAG 2-312	1664
11	UNIV CALIF-BERKELEY	Hollenbach, D.	ARC	McKee, C.	NCA 2-21	1713
11	UNIV CALIF-BERKELEY	Cassen, P.	ARC	Shu, F. H.	NCA 2-64	1715
11	UNIV CALIF-BERKELEY	Hollenbach, D.	ARC	McKee, C.	NCA 2-67	1716
11	UNIV CALIF-BERKELEY	Hollenbach, D.	ARC	McKee, C.	NCA 2-50405	1723
11	UNIV CALIF-BERKELEY	Cassen, P. M.	ARC	Shu, F. H.	NCA 2-50406	1724
11	UNIV CALIF-BERKELEY	Cassen, P.	ARC	Shu, F. F.	NCA 2-50501	1725
11	UNIV CALIF-BERKELEY	Erickson, E. F.	ARC	Heiles, C. E.	NCC 2-142	1728
11	UNIV CALIF-BERKELEY	Kondo, Y.	GSFC	Bowyer, C. S.	NAG 5-69	1672
11	UNIV CALIF-BERKELEY	Kondo, Y.	GSFC	Basri, G.	NAG 5-345	1674
11	UNIV CALIF-BERKELEY	Osantowski, J. F.	GSFC	Bowyer, C. S.	NAG 5-420	1677
11	UNIV CALIF-BERKELEY	Bullock, G. D.	GSFC	Anderson, K. A.	NAG 5-522	1679
11	UNIV CALIF-BERKELEY	Kondo, Y.	GSFC	Basri, G. S.	NAG 5-576	1680
11	UNIV CALIF-BERKELEY	Bullock, G. D.	GSFC	Bowyer, C. S.	NAS 5-26837	1703
11	UNIV CALIF-BERKELEY	O'brien, J. J.	GSFC	Hudson, M. K.	NAS 5-26867	1706
11	UNIV CALIF-BERKELEY	Mather, J. C.	GSFC	Smoot, G. F.	NAS 5-27592	1708
11	UNIV CALIF-BERKELEY	Leckrone, D.	GSFC	King, I.	NAS 5-28086	1709
11	UNIV CALIF-BERKELEY	Early, L. J.	GSFC	Bowyer, C. S.	NGR 05-003-450	1739
11	UNIV CALIF-BERKELEY	O'neal, R. L.	LARC	Price, P. B.	NAS 1-17426	1700
11	UNIV CALIF-BERKELEY	Jones, J. L.	LARC	Price, P. B.	NAS 1-17806	1701
11	UNIV CALIF-BERKELEY	Johnson, W. G.	MSFC	McKee, C. F.	NAG 8-466	1683
11	UNIV CALIF-BERKELEY	Johnson, W. G.	MSFC	Bowyer, C.	NAG 8-514	1684
11	UNIV CALIF-BERKELEY	Johnson, W. G.	MSFC	Kahn, S. M.	NAG 8-515	1685
11	UNIV CALIF-BERKELEY	Devincenzi, D. L.	HQ-EB	Bowyer, C. S.	NAGW 526	1694
11	UNIV CALIF-BERKELEY	Brinton, H. C.	HQ-EL	Spinrad, H.	NAGW 270	1689
11	UNIV CALIF-BERKELEY	Brunk, W. E.	HQ-EL	Lin, R. P.	NASW 3575	1711
11	UNIV CALIF-BERKELEY	Brunk, W. E.	HQ-EL	Townes, C. H.	NGR 05-003-452	1740
11	UNIV CALIF-BERKELEY	Boggess, N. W.	HQ-EZ	Smoot, G. F.	NAGW 66	1687
11	UNIV CALIF-BERKELEY	Stencel, R. E.	HQ-EZ	Townes, C. H.	NGL 05-003-272	1736
11	UNIV CALIF-BERKELEY	Ormes, J. F.	HQ-EZ	Price, P. B.	NGR 05-003-376	1738
11	UNIV CALIF-BERKELEY	Ormes, J. F.	HQ-EZ	Heckman, H. H.	NGR 05-003-513	1742
11	UNIV CALIF-BERKELEY	Stencel, R. E.	HQ-EZ	Silk, J. I.	NGR 05-003-578	1743
11	UNIV CALIF-BERKELEY	Boggess, N. W.	HQ-EZ	Richards, P. L.	NSG 7205	1751
11	UNIV CALIF-BERKELEY	Owens, F. C.	HQ-LE	Bowyer, C. S.	NGT 05-003-805	1748
11	UNIV CALIF-BERKELEY	Owens, F. C.	HQ-LB	Shu, F. H.	NGT 05-003-802	1745
11	UNIV CALIF-DAVIS	Johnson, W. G.	MSFC	Becker, R. H.	NAG 8-501	1759
11	UNIV CALIF-L ANGELES	Ramos, R.	ARC	Jura, M. A.	NAG 2-313	1802

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11	UNIV CALIF-L ANGELES	Ramos, R.	ARC	Wright, E. L.	NAG 2-315	1803
11	UNIV CALIF-L ANGELES	Hollenbach, D. J.	ARC	Wright, E.	NCA 2-390401	1851
11	UNIV CALIF-L ANGELES	Caroff, L.	ARC	Zuckerman, B.	NCA 2-390404	1854
11	UNIV CALIF-L ANGELES	Wales, R. O.	GSFC	Crooker, N.	NAG 5-566	1815
11	UNIV CALIF-L ANGELES	Kondo, Y.	GSFC	Malkan, M. A.	NAG 5-575	1816
11	UNIV CALIF-L ANGELES	Kondo, Y.	GSFC	Zuckerman, B. M.	NAG 5-710	1817
11	UNIV CALIF-L ANGELES	Vitagliano, H. D.	GSFC	Jura, M. A.	NAS 5-25657	1841
11	UNIV CALIF-L ANGELES	Wales, R. O.	GSFC	Russell, C. T.	NAS 5-25772	1842
11	UNIV CALIF-L ANGELES	Mather, J. C.	GSFC	Wright, E. L.	NAS 5-27670	1848
11	UNIV CALIF-L ANGELES	Kondo, Y.	GSFC	Plavec, M. J.	NSG 5272	1873
11	UNIV CALIF-L ANGELES	Kondo, Y.	GSFC	Aller, L. H.	NSG 5358	1875
11	UNIV CALIF-L ANGELES	Boyce, J. M.	HQ-EL	Nicol, M. F.	NAGW 104	1829
11	UNIV CALIF-L ANGELES	Stencel, R. E.	HQ-EZ	Jura, M. A.	NAGW 80	1827
11	UNIV CALIF-L ANGELES	Kaluzienski, L. J.	HQ-EZ	Kennel, C. F.	NSG 7341	1879
11	UNIV CALIF-RIVERSIDE	Brinton, H. C.	HQ-EL	White, R. S.	NAGW 709	1882
11	UNIV CALIF-RIVERSIDE	Ormes, J. F.	HQ-EZ	White, R. S.	NGR 05-008-022	1884
11	UNIV CALIF-SAN DIEGO	Haughney, L. C.	ARC	Jones, B.	NGR 05-005-055	1948
11	UNIV CALIF-SAN DIEGO	Kondo, Y.	GSFC	Worrall, D. M.	NAG 5-63	1890
11	UNIV CALIF-SAN DIEGO	Kondo, Y.	GSFC	Coehen, R. D.	NAG 5-364	1893
11	UNIV CALIF-SAN DIEGO	Bullock, G. D.	GSFC	Canfield, R. C.	NAG 5-523	1895
11	UNIV CALIF-SAN DIEGO	Trombka, J. I.	GSFC	Arnold, J.	NAG 5-530	1896
11	UNIV CALIF-SAN DIEGO	White, R. A.	GSFC	Harms, R. A.	NAS 5-24463	1925
11	UNIV CALIF-SAN DIEGO	Shannon, J. L.	GSFC	Beaver, E. A.	NAS 5-25054	1926
11	UNIV CALIF-SAN DIEGO	Johnson, W. G.	MSFC	Peterson, L. E.	NAG 8-499	1901
11	UNIV CALIF-SAN DIEGO	Stone, J. F.	MSFC	Peterson, L. E.	NAS 8-27974	1936
11	UNIV CALIF-SAN DIEGO	Schrick, B. J.	MSFC	Matteson, J. L.	NAS 8-36081	1937
11	UNIV CALIF-SAN DIEGO	Rosendhal, J. D.	HQ-E	Whipple, E. C., Jr.	NAGW 399	1912
11	UNIV CALIF-SAN DIEGO	Brinton, H. C.	HQ-EL	Mendis, D. A.	NGR 05-009-110	1949
11	UNIV CALIF-SAN DIEGO	Stencel, R. E.	HQ-EZ	Townes, C. H.	NAGW 30	1908
11	UNIV CALIF-SAN DIEGO	Cline, T. L.	HQ-EZ	Matteson, J. L.	NAGW 449	1913
11	UNIV CALIF-SAN DIEGO	Ormes, J. F.	HQ-EZ	Peterson, L. E.	NAGW 685	1922
11	UNIV CALIF-SAN DIEGO	Weiler, E. J.	HQ-EZ	Hier, R. G.	NASW 3667	1940
11	UNIV CALIF-SAN DIEGO	Boggess, N. W.	HQ-EZ	Jones, B.	NASW 3702	1942
11	UNIV CALIF-SAN DIEGO	Kaluzienski, L. J.	HQ-EZ	Gould, R. J.	NGL 05-005-004	1945
11	UNIV CALIF-SAN DIEGO	Weiler, E. J.	HQ-EZ	McIlwain, C. E.	NGR 05-009-188	1950
11	UNIV CALIF-SAN DIEGO	Stencel, R. E.	HQ-EZ	Burbidge, E. M.	NSG 7377	1956
11	UNIV CALIF-SAN DIEGO	Kaluzienski, L. J.	HQ-EZ	Lingenfelter, R. E.	NSG 7541	1958
11	UNIV CALIF-S CRUZ	Cassen, P. M.	ARC	Bodenheimer, P.	NAG 2-368	2011
11	UNIV CALIF-S CRUZ	Erickson, E. F.	ARC	Rank, D.	NCA 2-62	2016
11	UNIV CALIF-S CRUZ	Cassen, P. M.	ARC	Lin, D. N.	NCA 2-65	2017
11	UNIV CALIF-S CRUZ	Cassen, P. M.	ARC	Bodenheimer, P.	NCA 2-66	2018
11	UNIV CALIF-S CRUZ	Augason, G. C.	ARC	Faber, S. M.	NCA 2-690401	2019
11	UNIV CALIF-S CRUZ	Cuzzi, J. N.	ARC	Lin, D. N.	NCA 2-690403	2020
11	UNIV CALIF-S CRUZ	Witteborn, F. C.	ARC	Rank, D. M.	NCA 2-690404	2021
11	UNIV CALIF-S CRUZ	Cuzzi, J. N.	ARC	Lin, N. C.	NCA 2-690501	2022
11	UNIV CALIF-S CRUZ	Black, D.	ARC	Bodenheimer, P. H.	NCC 2-269	2023
11	UNIV CALIF-S CRUZ	Black, D. E.	ARC	Bodenheimer, P.	NCC 2-281	2024
11	UNIV CALIF-S CRUZ	Kondo, Y.	GSFC	Miller, J. S.	NAG 5-352	2012
11	UNIV CALIF-S CRUZ	Kondo, Y.	GSFC	Faber, S. M.	NAG 5-436	2013
11	UNIV CALIF-S CRUZ	Stencel, R. E.	HQ-EZ	Faulkner, J.	NAGW 508	2014
11	UNIV CALIF-S CRUZ	Weiler, E. J.	HQ-EZ	Miller, J. S.	NSG 7503	2027
11	UNIV OF CHICAGO	Werner, M. W.	ARC	Hildebrand, R. H.	NAG 2-364	2536
11	UNIV OF CHICAGO	Smith, B. F.	ARC	Miller, R. H.	NCA 2-108101	2574
11	UNIV OF CHICAGO	Roellig, T. P.	ARC	Hildebrand, R. H.	NCA 2-108201	2575
11	UNIV OF CHICAGO	Smith, B. F.	ARC	Miller, R. H.	NCC 2-265	2576
11	UNIV OF CHICAGO	Haughney, L. C.	ARC	Harper, D. A., Jr.	NGR 14-001-227	2583
11	UNIV OF CHICAGO	Haughney, L. C.	ARC	Hildebrand, R. H.	NSG 2057	2590
11	UNIV OF CHICAGO	Kondo, Y.	GSFC	Hobbs, L. M.	NAG 5-255	2538
11	UNIV OF CHICAGO	Kondo, Y.	GSFC	York, D. G.	NAG 5-406	2543
11	UNIV OF CHICAGO	Kondo, Y.	GSFC	Harper, D. A.	NAG 5-464	2544

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
11	UNIV OF CHICAGO	Kondo, Y.	GSFC	Kron, R. G.	NAG 5-551	2545
11	UNIV OF CHICAGO	Kondo, Y.	GSFC	Frisch, P. C.	NAG 5-704	2546
11	UNIV OF CHICAGO	Wales, R. O.	GSFC	Simpson, J. A.	NAG 5-706	2547
11	UNIV OF CHICAGO	Wales, R. O.	GSFC	Simpson, J. A.	NAS 5-25731	2566
11	UNIV OF CHICAGO	Wales, R. O.	GSFC	Meyer, P.	NAS 5-26680	2567
11	UNIV OF CHICAGO	Wales, R. O.	GSFC	Simpson, J. A.	NAS 5-28442	2568
11	UNIV OF CHICAGO	Browne, I. D.	JSC	Clayton, R. N.	NAG 9-51	2549
11	UNIV OF CHICAGO	Quaide, W. L.	HQ-EL	Simpson, J. A.	NASW 4043	2573
11	UNIV OF CHICAGO	Kaluzienski, L. J.	HQ-EZ	Arnett, W. D.	NAGW 123	2554
11	UNIV OF CHICAGO	Stencel, R. E.	HQ-EZ	York, D. G.	NAGW 405	2555
11	UNIV OF CHICAGO	Stencel, R. E.	HQ-EZ	York, D. G.	NAGW 507	2558
11	UNIV OF CHICAGO	Stencel, R. E.	HQ-EZ	York, D. G.	NAGW 671	2561
11	UNIV OF CHICAGO	Spicer, D. S.	HQ-EZ	Parker, E. N.	NGL 14-001-001	2577
11	UNIV OF CHICAGO	Cline, T. L.	HQ-EZ	Meyer, P.	NGL 14-001-005	2578
11	UNIV OF CHICAGO	Cline, T. L.	HQ-EZ	Simpson, J. A.	NGL 14-001-006	2579
11	UNIV OF CHICAGO	Stencel, R. E.	HQ-EZ	Hobbs, L. M.	NGR 14-001-147	2582
11	UNIV OF CHICAGO	Owens, F. C.	HQ-LE	Harper, D. A.	NGT 14-020-800	2584
11	UNIV COLORADO-BOLDR	Kondo, Y.	GSFC	Garmany, K.	NAG 5-78	2118
11	UNIV COLORADO-BOLDR	Kondo, Y.	GSFC	Linsky, J. L.	NAG 5-82	2119
11	UNIV COLORADO-BOLDR	Early, L. J.	GSFC	Cash, W. C.	NAG 5-96	2120
11	UNIV COLORADO-BOLDR	Kondo, Y.	GSFC	Shull, J. M.	NAG 5-193	2122
11	UNIV COLORADO-BOLDR	Kondo, Y.	GSFC	Ayres, T. R.	NAG 5-199	2123
11	UNIV COLORADO-BOLDR	Kondo, Y.	GSFC	Brugal, E. W.	NAG 5-350	2125
11	UNIV COLORADO-BOLDR	Osantowski, J. F.	GSFC	Cash, W. C.	NAG 5-412	2126
11	UNIV COLORADO-BOLDR	Kondo, Y.	GSFC	Begelman, M. C.	NAG 5-421	2128
11	UNIV COLORADO-BOLDR	Kondo, Y.	GSFC	Walter, F. M.	NAG 5-429	2129
11	UNIV COLORADO-BOLDR	Kondo, Y.	GSFC	Fesen, R. A.	NAG 5-433	2130
11	UNIV COLORADO-BOLDR	Bullock, G. D.	GSFC	Toomre, J.	NAG 5-513	2134
11	UNIV COLORADO-BOLDR	Mead, J. M.	GSFC	Snow, T. P., Jr.	NAS 5-26409	2164
11	UNIV COLORADO-BOLDR	Wolff, C. L.	GSFC	Blizard, J.	NAS 5-28196	2171
11	UNIV COLORADO-BOLDR	Mead, J. M.	GSFC	Snow, T.	NAS 5-28731	2173
11	UNIV COLORADO-BOLDR	Kondo, Y.	GSFC	Snow, T. P., Jr.	NSG 5300	2195
11	UNIV COLORADO-BOLDR	Early, L. J.	GSFC	Snow, T. P., Jr.	NSG 5303	2196
11	UNIV COLORADO-BOLDR	Johnson, W. G.	MSFC	Linsky, J. L.	NAG 8-477	2136
11	UNIV COLORADO-BOLDR	Johnson, W. G.	MSFC	Walter, F. M.	NAG 8-508	2137
11	UNIV COLORADO-BOLDR	Johnson, W. G.	MSFC	Linsky, J. L.	NAG 8-510	2138
11	UNIV COLORADO-BOLDR	Johnson, W. G.	MSFC	Linsky, J. L.	NAG 8-538	2139
11	UNIV COLORADO-BOLDR	Butler, D. M.	HQ-EE	Dulk, G. A.	NAGW 91	2140
11	UNIV COLORADO-BOLDR	Vescelus, F.	HQ-EL	Warwick, J.	NASW 4024	2183
11	UNIV COLORADO-BOLDR	Kaluzienski, L. J.	HQ-EZ	Norcross, D. W.	NAGW 675	2153
11	UNIV COLORADO-BOLDR	Stencel, R. E.	HQ-EZ	McCray, R.	NAGW 766	2155
11	UNIV COLORADO-BOLDR	Kaluzienski, L.	HQ-EZ	McCray, R.	NSG 7128	2197
11	UNIV COLORADO-BOLDR	Weiler, E. J.	HQ-EZ	Timothy, J. G.	NSG 7459	2199
11	UNIV COLORADO-BOLDR	Stencel, R. E.	HQ-EZ	Snow, T. P.	NSG 7626	2201
11	UNIV OF DAYTON	Taylor, R. A.	MSFC	Piekutowski, A.	NAS 8-36646	4251
11	UNIV OF DELAWARE	Kondo, Y.	GSFC	Shipman, H. L.	NAG 5-348	2246
11	UNIV OF DENVER	Goldberg, R. A.	GSFC	Barcus, J. R.	NAS 5-26627	2207
11	UNIV OF FLORIDA	Fimmel, R. O.	ARC	Weinberg, J. L.	NAS 2-11007	2366
11	UNIV OF FLORIDA	Volpe, F.	GSFC	Weinberg, J.	NAS 5-26383	2368
11	UNIV OF FLORIDA	Brunk, W. E.	HQ-EL	Weinberg, J.	NASW 3578	2369
11	UNIV OF GEORGIA	Kondo, Y.	GSFC	Shaw, J. S.	NAG 5-280	2455
11	UNIV OF GEORGIA	Kondo, Y.	GSFC	Scott, J. S.	NAG 5-365	2457
11	UNIV OF HAWAII-MANOA	Goebel, J. H.	ARC	Capps, R. W.	NAG 2-165	2461
11	UNIV OF HAWAII-MANOA	Fimmel, R. O.	ARC	Mouginis-mark, P.	NAG 2-262	2462
11	UNIV OF HAWAII-MANOA	Black, D. C.	ARC	Heacox, W. D.	NAG 2-295	2463
11	UNIV OF HAWAII-MANOA	Kondo, Y.	GSFC	Simon, T.	NAG 5-146	2464
11	UNIV OF HAWAII-MANOA	Hughes, W. E.	GSFC	Jefferies, J. T.	NAS 5-25181	2490
11	UNIV OF HAWAII-MANOA	Shawe, M. E.	GSFC	Hall, D. N.	NAS 5-28595	2492
11	UNIV OF HAWAII-MANOA	Johnson, W. G.	MSFC	Henry, J. P.	NAG 8-458	2467
11	UNIV OF HAWAII-MANOA	Johnson, W. G.	MSFC	Henry, J. P.	NAG 8-543	2468

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11	UNIV OF HAWAII-MANOA	Brinton, H. C.	HQ-EL	Brown, R. H.	NAGW 636	2484
11	UNIV OF HAWAII-MANOA	Brinton, H.	HQ-EL	Bell, J. F.	NAGW 802	2489
11	UNIV OF HAWAII-MANOA	Brunk, W.	HQ-EL	Hall, D. N.	NASW 3159	2493
11	UNIV OF HAWAII-MANOA	Brunk, W. E.	HQ-EL	Jefferies, J. T.	NGF 12-001-103	2496
11	UNIV OF HAWAII-MANOA	Brunk, W. E.	HQ-EL	Hall, D. N.	NGL 12-001-057	2498
11	UNIV OF HAWAII-MANOA	Brunk, W. E.	HQ-EL	McCord, T. B.	NSG 7323	2503
11	UNIV OF HAWAII-MANOA	Bohlin, J. D.	HQ-EZ	Hall, D. N.	NGL 12-001-011	2497
11	UNIV ILLINOIS-URBANA	Kondo, Y.	GSFC	Kaler, J. B.	NAG 5-171	2619
11	UNIV ILLINOIS-URBANA	Kondo, Y.	GSFC	Gallagher, J. S.	NAG 5-362	2620
11	UNIV ILLINOIS-URBANA	Kondo, Y.	GSFC	Lamb, S. A.	NAG 5-404	2622
11	UNIV ILLINOIS-URBANA	Johnson, W. G.	MSFC	Dickel, J. R.	NAG 8-476	2623
11	UNIV ILLINOIS-URBANA	Johnson, W. G.	MSFC	Dickel, J. R.	NAG 8-540	2624
11	UNIV ILLINOIS-URBANA	Kaluzienski, L.	HQ-EZ	Lamb, F. K.	NSG 7653	2639
11	UNIV OF IOWA	Wales, R. O.	GSFC	Frank, L. A.	NAG 5-295	2754
11	UNIV OF IOWA	Bullock, G. D.	GSFC	Gurnett, D. A.	NAG 5-527	2758
11	UNIV OF IOWA	Wales, R. O.	GSFC	Mellott, M.	NAG 5-570	2759
11	UNIV OF IOWA	Bullock, G.	GSFC	Gurnett, D. A.	NAS 5-11279	2767
11	UNIV OF IOWA	Bullock, G. D.	GSFC	Frank, L. A.	NAS 5-25689	2768
11	UNIV OF IOWA	Wales, R. O.	GSFC	Gurnett, D. A.	NAS 5-26819	2771
11	UNIV OF IOWA	O'Brien, J. J.	GSFC	Frank, L. A.	NAS 5-26858	2774
11	UNIV OF IOWA	Brinton, H. C.	HQ-EL	Neff, J. S.	NAGW 796	2765
11	UNIV OF KANSAS	Rosendhal, J. D.	HQ-E	Frost, V. S.	NAGW 381	2806
11	UNIV OF KENTUCKY	Kondo, Y.	GSFC	Ferland, G. J.	NAG 5-239	2839
11	UNIV MARYLAND-COL PK	Pearl, J. C.	GSFC	Khanna, R. K.	NAG 5-216	2945
11	UNIV MARYLAND-COL PK	Kondo, Y.	GSFC	A'hearn, M. F.	NAG 5-252	2950
11	UNIV MARYLAND-COL PK	Kondo, Y.	GSFC	Harrington, J. P.	NAG 5-430	2963
11	UNIV MARYLAND-COL PK	Bullock, G. D.	GSFC	Kundu, M. R.	NAG 5-511	2966
11	UNIV MARYLAND-COL PK	Kondo, Y.	GSFC	Bell, R. A.	NAG 5-589	2970
11	UNIV MARYLAND-COL PK	Wales, R. O.	GSFC	Gloeckler, G.	NAG 5-705	2971
11	UNIV MARYLAND-COL PK	Ogilvie, K. W.	GSFC	Coplan, M. A.	NAS 5-25472	2987
11	UNIV MARYLAND-COL PK	Wales, R. O.	GSFC	Gloeckler, G.	NAS 5-25735	2989
11	UNIV MARYLAND-COL PK	Wales, R. O.	GSFC	Gloeckler, G.	NAS 5-26739	2992
11	UNIV MARYLAND-COL PK	Wales, R. O.	GSFC	Gloeckler, G.	NAS 5-28439	3000
11	UNIV MARYLAND-COL PK	Wolff, C. L.	GSFC	Wentzel, D. G.	NCC 5-31	3014
11	UNIV MARYLAND-COL PK	Johnson, W. G.	MSFC	Wilson, A. S.	NAG 8-462	2973
11	UNIV MARYLAND-COL PK	Owens, J. H., Jr.	MSFC	A'hearn, M. F.	NAG 8-486	2974
11	UNIV MARYLAND-COL PK	Johnson, W. G.	MSFC	Matthews, D. L.	NAG 8-506	2975
11	UNIV MARYLAND-COL PK	Dailey, C. C.	MSFC	Wilson, A. S.	NAG 8-529	2976
11	UNIV MARYLAND-COL PK	Brunk, W. E.	HQ-EL	A'hearn, M. F.	NSG 7322	3042
11	UNIV MARYLAND-COL PK	Kaluzienski, L. J.	HQ-EZ	Earl, J. A.	NGR 21-002-066	3018
11	UNIV MARYLAND-COL PK	Stencel, R. E.	HQ-EZ	Griem, H. R.	NGR 21-002-073	3019
11	UNIV MARYLAND-COL PK	Ormes, J.	HQ-EZ	Mason, G.	NGR 21-002-224	3022
11	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Amaty, R. R.	NGT 21-002-811	3027
11	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Gloeckler, G.	NGT 21-002-812	3028
11	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Matthews, T. A.	NGT 21-002-817	3031
11	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Kerr, F.	NGT 21-002-819	3033
11	UNIV OF MASS-AMHERST	Kondo, Y.	GSFC	Strom, S.	NAG 5-558	3285
11	UNIV OF MASS-AMHERST	Brinton, H. C.	HQ-EL	Irvine, W. M.	NGL 22-010-023	3293
11	UNIV OF MASS-AMHERST	Boggess, N. W.	HQ-EZ	Goldsmith, P.	NAGW 623	3292
11	UNIV MICH-ANN ARBOR	Fimmel, R. O.	ARC	Donahue, T. M.	NAS 2-9126	3396
11	UNIV MICH-ANN ARBOR	Craig, R. A.	ARC	Nagy, A. F.	NAS 2-9130	3397
11	UNIV MICH-ANN ARBOR	Kondo, Y.	GSFC	Cowley, C. R.	NAG 5-251	3371
11	UNIV MICH-ANN ARBOR	Kondo, Y.	GSFC	Kriss, G. A.	NAG 5-324	3372
11	UNIV MICH-ANN ARBOR	Kondo, Y.	GSFC	Kirshner, R. P.	NAG 5-442	3374
11	UNIV MICH-ANN ARBOR	Kondo, Y.	GSFC	MacAlpine, G. M.	NAG 5-552	3380
11	UNIV MICH-ANN ARBOR	Wales, R. O.	GSFC	Cravens, T.	NAG 5-565	3381
11	UNIV MICH-ANN ARBOR	Bullock, G. D.	GSFC	Nagy, A. F.	NAS 5-25038	3401
11	UNIV MICH-ANN ARBOR	Bullock, G. D.	GSFC	Carignan, G. R.	NAS 5-26069	3404
11	UNIV MICH-ANN ARBOR	Jones, J. L.	LARC	Tarle, G.	NAG 1-487	3352
11	UNIV MICH-ANN ARBOR	Jones, J. L.	LARC	Tarle, G.	NAS 1-17820	3395

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11	UNIV MICH-ANN ARBOR	Johnson, W. G.	MSFC	Teske, R. G.	NAG 8-535	3383
11	U MINN-MNPLS-ST PAUL	Kondo, Y.	GSFC	Sitko, M. L.	NAG 5-190	3444
11	U MINN-MNPLS-ST PAUL	Kondo, Y.	GSFC	Pennington, R. L.	NAG 5-559	3447
11	U MINN-MNPLS-ST PAUL	Bullock, G. D.	GSFC	Kellogg, P. J.	NAS 5-11310	3457
11	U MINN-MNPLS-ST PAUL	Sugiura, M.	GSFC	Cahill, L. J., Jr.	NAS 5-25389	3458
11	U MINN-MNPLS-ST PAUL	Klein, B.	GSFC	Kellogg, P. J.	NAS 5-25753	3459
11	U MINN-MNPLS-ST PAUL	Kondo, Y.	GSFC	Davidson, K.	NSG 5397	3471
11	U MINN-MNPLS-ST PAUL	Johnson, W. G.	MSFC	Waddington, C. J.	NAG 8-500	3449
11	U MINN-MNPLS-ST PAUL	Stone, J. F.	MSFC	Waddington, C. J.	NAS 8-27977	3462
11	U MINN-MNPLS-ST PAUL	Quaide, W. L.	HQ-EL	Mauersberger, K.	NAGW 505	3454
11	U MINN-MNPLS-ST PAUL	Ormes, J. F.	HQ-EZ	Waddington, C. J.	NGR 24-005-050	3464
11	U MINN-MNPLS-ST PAUL	Stencel, R. E.	HQ-EZ	Ney, E. P.	NSG 2014	3468
11	UNIV MO-ST LOUIS	Kondo, Y.	GSFC	Schwartz, R. D.	NAG 5-243	3513
11	UNIV MO-ST LOUIS	Kondo, Y.	GSFC	Schwartz, R. D.	NAG 5-461	3514
11	UNIV NEBRASKA-LINCLN	Kondo, Y.	GSFC	Schmidt, E. G.	NAG 5-282	3561
11	UNIV NEW HAMP-DURHAM	Trainor, J. H.	GSFC	Webber, W. R.	NAG 5-515	3582
11	UNIV NEW HAMP-DURHAM	Underwood, C.	GSFC	Chupp, E. L.	NAS 5-23761	3592
11	UNIV NEW HAMP-DURHAM	Davis, M. A.	GSFC	Lockwood, J. A.	NAS 5-26645	3594
11	UNIV NEW HAMP-DURHAM	Trainor, J. H.	GSFC	Webber, W. R.	NAS 5-28406	3595
11	UNIV NEW HAMP-DURHAM	Johnson, W. G.	MSFC	Webber, W. R.	NAG 8-468	3584
11	UNIV NEW HAMP-DURHAM	Quaide, W. L.	HQ-EL	Webber, W. R.	NAGW 371	3587
11	UNIV NEW HAMP-DURHAM	Cline, T. L.	HQ-EZ	Chupp, E. L.	NGL 30-002-021	3602
11	UNIV NEW HAMP-DURHAM	Ormes, J. F.	HQ-EZ	Webber, W. R.	NGR 30-002-052	3603
11	UNIV NEW HAMP-DURHAM	Kaluzienski, L. J.	HQ-EZ	Lockwood, J. A.	NSG 7481	3606
11	UNIV OF NEW MEXICO	Johnson, W. G.	MSFC	Burns, J. O.	NAG 8-461	3681
11	UNIV N CAR-CHPL HILL	Kondo, Y.	GSFC	Carney, B. W.	NAG 5-424	4015
11	UNIV N CAR-CHPL HILL	Owens, F. C.	HQ-LB	Christiansen, W. A.	NGT 34-003-801	4018
11	UNIV OKLAHOMA-NORMAN	Stone, J. F.	MSFC	Chincarini, G.	NAG 8-372	4295
11	UNIV OREGON-EUGENE	Wilson, D. E.	ARC	Nolt, I. G.	NCA 2-587401	4318
11	UNIV OF PACIFIC	Hollenbach, D.	ARC	Takahashi, T.	NCA 2-588401	2031
11	UNIV OF PENNSYLVANIA	Kondo, Y.	GSFC	Koch, R. H.	NAG 5-468	4431
11	UNIV OF PENNSYLVANIA	Bullock, G. D.	GSFC	Garmire, G.	NAS 5-28443	4433
11	UNIV OF PITTSBURGH	Black, D. C.	ARC	Gatewood, G. D.	NAG 2-53	4442
11	UNIV OF PITTSBURGH	Kondo, Y.	GSFC	Turnshek, D. A.	NAG 5-249	4446
11	UNIV OF PITTSBURGH	Kondo, Y.	GSFC	Hazard, C.	NAG 5-553	4448
11	UNIV OF PITTSBURGH	Brinton, H. C.	HQ-EL	Biondi, M. A.	NGR 39-011-137	4455
11	UNIV OF PITTSBURGH	Boyce, J. M.	HQ-EL	Hapke, B.	NSG 7147	4458
11	UNIV OF ROCHESTER	Goebel, J. H.	ARC	Forrest, W. J.	NAG 2-117	3948
11	UNIV OF ROCHESTER	Haughney, L. C.	ARC	Pipher, J. L.	NAG 2-309	3949
11	UNIV OF ROCHESTER	Kondo, Y.	GSFC	Woodward, C. E.	NAG 5-408	3951
11	UNIV OF SOUTHERN CAL	Kondo, Y.	GSFC	Barry, D. C.	NAG 5-457	2069
11	UNIV OF SOUTHERN CAL	Kondo, Y.	GSFC	Peters, G. J.	NSG 5422	2080
11	UNIV OF SOUTHERN CAL	Brinton, H. C.	HQ-EL	Shemansky, D. E.	NAGW 106	2072
11	UNIV OF SOUTHERN CAL	Brinton, H. C.	HQ-EL	Shemansky, D. E.	NAGW 316	2074
11	UNIV TENNESSEE-KNOXV	Dietrich, J. W.	JSC	Hunter, R. H.	NGL 43-001-140	4546
11	UNIV TEXAS-AUSTIN	Haughney, L. C.	ARC	Harvey, P. M.	NAG 2-67	4731
11	UNIV TEXAS-AUSTIN	Haughney, L. C.	ARC	Evans, N. J., II	NAG 2-199	4733
11	UNIV TEXAS-AUSTIN	Haughney, L. C.	ARC	Evans, N. J., Jr.	NAG 2-253	4734
11	UNIV TEXAS-AUSTIN	Haughney, L. C.	ARC	Dinerstein, H. L.	NAG 2-372	4735
11	UNIV TEXAS-AUSTIN	Werner, M. W.	ARC	Dinerstein, H. L.	NCA 2-34	4764
11	UNIV TEXAS-AUSTIN	Werner, M. W.	ARC	Shields, G.	NCA 2-781201	4765
11	UNIV TEXAS-AUSTIN	Kondo, Y.	GSFC	Snedden, C.	NAG 5-437	4740
11	UNIV TEXAS-AUSTIN	Kondo, Y.	GSFC	Wills, B. J.	NAG 5-543	4742
11	UNIV TEXAS-AUSTIN	Kondo, Y.	GSFC	Shields, G.	NAG 5-569	4743
11	UNIV TEXAS-AUSTIN	Vitagliano, H. D.	GSFC	Trafton, L. M.	NAS 5-25656	4749
11	UNIV TEXAS-AUSTIN	Hughes, W. E.	GSFC	Shelus, P. J.	NAS 5-25948	4750
11	UNIV TEXAS-AUSTIN	Kondo, Y.	GSFC	Lambert, D. L.	NSG 5379	4775
11	UNIV TEXAS-AUSTIN	Owens, J. H.	MSFC	Opal, C. B.	NAG 8-484	4745
11	UNIV TEXAS-AUSTIN	O'dell, C. R.	MSFC	Lambert, D. L.	NAS 8-32905	4754
11	UNIV TEXAS-AUSTIN	Humphreys, J. T.	MSFC	Jefferys, W. H.	NAS 8-32906	4755

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11	UNIV TEXAS-AUSTIN	Brinton, H. C.	HQ-EL	Smith, H. J.	NGR 44-012-152	4769
11	UNIV TEXAS-AUSTIN	Stencel, R. E.	HQ-EZ	Duncombe, R. L.	NAGW 233	4747
11	UNIV TEXAS-AUSTIN	Owens, F. C.	HQ-LE	Smith, H. J.	NGT 44-012-804	4773
11	UNIV TEXAS-AUSTIN	Owens, F. C.	HQ-LB	Bash, F. N.	NGT 44-012-802	4771
11	UNIV TEXAS-DALLAS	Wales, R. O.	GSFC	Heikkila, W.	NAG 5-572	4787
11	UNIV TEXAS-DALLAS	Chappell, C. R.	MSFC	Hofman, J. H.	NAS 8-35011	4797
11	UNIV TEXAS-DALLAS	Brunk, W. E.	HQ-EL	Hoffman, J. H.	NASW 3576	4798
11	UNIV OF TOLEDO	Kondo, Y.	GSFC	Morrison, N. D.	NAG 5-253	4266
11	UNIV OF TOLEDO	Kondo, Y.	GSFC	Bopp, B. W.	NAG 5-254	4267
11	UNIV OF TOLEDO	Kondo, Y.	GSFC	Witt, A. N.	NAG 5-467	4268
11	UNIV OF TOLEDO	Stencel, R. E.	HQ-EZ	Witt, A. N.	NAGW 89	4270
11	UNIV OF TOLEDO	Weiler, E. J.	HQ-EZ	Bopp, B. W.	NAGW 229	4271
11	UNIV OF VIRGINIA	Kondo, Y.	GSFC	O'connell, R. W.	NAG 5-256	4999
11	UNIV OF VIRGINIA	Kondo, Y.	GSFC	Thuan, T. X.	NAG 5-257	5000
11	UNIV OF VIRGINIA	Kondo, Y.	GSFC	O'connell, R. W.	NAG 5-582	5002
11	UNIV OF VIRGINIA	Stecher, T. P.	GSFC	O'Connell, R. W.	NAG 5-700	5004
11	UNIV OF VIRGINIA	Stecher, T. P.	GSFC	O'connell, R. W.	NAS 5-26110	5014
11	UNIV OF VIRGINIA	Stone, J. F.	MSFC	Thuan, T. X.	NAG 8-375	5006
11	UNIV OF WASHINGTON	Kondo, Y.	GSFC	Bohm, K. H.	NAG 5-45	5111
11	UNIV OF WASHINGTON	Kondo, Y.	GSFC	Hodge, P. W.	NAG 5-207	5112
11	UNIV OF WASHINGTON	Kondo, Y.	GSFC	Margon, B.	NAG 5-342	5113
11	UNIV OF WASHINGTON	Kondo, Y.	GSFC	Brown, D.	NAG 5-357	5115
11	UNIV OF WASHINGTON	Kondo, Y.	GSFC	Fich, M.	NAG 5-549	5119
11	UNIV OF WASHINGTON	Kondo, Y.	GSFC	Hodge, P. W.	NAG 5-708	5121
11	UNIV OF WASHINGTON	Kondo, Y.	GSFC	Szkody, P.	NSG 5395	5155
11	UNIV OF WASHINGTON	Kondo, Y.	GSFC	Bohm-vitense, E.	NSG 5398	5156
11	UNIV OF WASHINGTON	Johnson, W. G.	MSFC	Margon, B. H.	NAG 8-433	5122
11	UNIV OF WASHINGTON	Johnson, W. G.	MSFC	Szkody, P.	NAG 8-516	5123
11	UNIV OF WASHINGTON	Kaluzienski, L. J.	HQ-EZ	Boynton, P. E.	NAGW 805	5141
11	UNIV WISC-MADISON	Fimmel, R. O.	ARC	Limaye, S.	NAG 2-265	5179
11	UNIV WISC-MADISON	Fimmel, R. O.	ARC	Revercomb, H.	NAG 2-266	5180
11	UNIV WISC-MADISON	Boese, R. W.	ARC	Sromovsky, L. A.	NAS 2-11615	5218
11	UNIV WISC-MADISON	Kondo, Y.	GSFC	Savage, B. D.	NAG 5-186	5188
11	UNIV WISC-MADISON	Kondo, Y.	GSFC	Anderson, C. M.	NAG 5-353	5192
11	UNIV WISC-MADISON	Kondo, Y.	GSFC	Code, A. D.	NAG 5-380	5193
11	UNIV WISC-MADISON	Gull, T. R.	GSFC	Roesler, F. L.	NAG 5-416	5196
11	UNIV WISC-MADISON	Kondo, Y.	GSFC	Cassinelli, J. P.	NAG 5-423	5197
11	UNIV WISC-MADISON	Kondo, Y.	GSFC	Mathis, J. S.	NAG 5-581	5200
11	UNIV WISC-MADISON	Barr, A.	GSFC	Bliss, R.	NAS 5-24487	5220
11	UNIV WISC-MADISON	Fellerman, K.	GSFC	Code, A. D.	NAS 5-25487	5221
11	UNIV WISC-MADISON	Vitagliano, H. D.	GSFC	Savage, B. C.	NAS 5-25714	5222
11	UNIV WISC-MADISON	Mercanti, E.	GSFC	Kraushaar, W. L.	NAS 5-26078	5223
11	UNIV WISC-MADISON	Early, L. J.	GSFC	Code, A. D.	NGL 50-002-013	5235
11	UNIV WISC-MADISON	Early, L. J.	GSFC	Kraushaar, W. L.	NGL 50-002-044	5236
11	UNIV WISC-MADISON	Stone, J. F.	MSFC	Sanders, W. T.	NAG 8-401	5203
11	UNIV WISC-MADISON	Stone, J. F.	MSFC	McCammon, D.	NAG 8-431	5204
11	UNIV WISC-MADISON	Johnson, W. G.	MSFC	Cassinelli, J. P.	NAG 8-534	5205
11	UNIV WISC-MADISON	Owens, J.	MSFC	Code, A. D.	NAS 5-26777	5224
11	UNIV WISC-MADISON	Rosendhal, J. D.	HQ-E	Weinman, J. A.	NAGW 380	5209
11	UNIV WISC-MADISON	Brinton, H. C.	HQ-EL	Scherb, F.	NAGW 695	5213
11	UNIV WISC-MADISON	Stencel, R. E.	HQ-EZ	Cassinelli, J. P.	NAGW 283	5207
11	UNIV WISC-MADISON	Stencel, R. E.	HQ-EZ	Cassinelli, J. P.	NAGW 422	5210
11	UNIV WISC-MADISON	Weiler, E. J.	HQ-EZ	Cab, A. D.	NAGW 435	5211
11	UNIV WISC-MADISON	Stencel, R. E.	HQ-EZ	Mathis, J. S.	NAGW 598	5212
11	UNIV WISC-MADISON	Stencel, R. E.	HQ-EZ	Churchwell, E. B.	NAGW 803	5215
11	UNIV OF WYOMING	Haughney, L. C.	ARC	Thronson, H. A., Jr.	NAG 2-134	5252
11	UNIV OF WYOMING	Haughney, L. C.	ARC	Smith, J.	NAG 2-252	5253
11	VANDERBILT UNIVERSITY	Kondo, Y.	GSFC	Eaton, J. A.	NAG 5-176	4554
11	VANDERBILT UNIVERSITY	Kondo, Y.	GSFC	Fekel, F. C., Jr.	NAG 5-397	4555
11	VILLANOVA UNIVERSITY	Kondo, Y.	GSFC	Sion, E. M.	NAG 5-343	4459

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11	VILLANOVA UNIVERSITY	Kondo, Y.	GSFC	Guinan, E. F.	NAG 5-382	4460
11	VIRGINIA POLY INST	Johnson, W. G.	MSFC	O'dell, S. L.	NAG 8-453	5079
11	VIRGINIA POLY INST	Owens, F. C.	HQ-LE	Dugger, W. E.	NGT 47-004-810	5094
11	WASHINGTON ST UNIV	Kondo, Y.	GSFC	Lutz, J. H.	NAG 5-410	5161
11	WASHINGTON UNIVERSTY	Stone, J. F.	MSFC	Margolis, S. H.	NAG 8-448	3521
11	WASHINGTON UNIVERSTY	Johnson, W. G.	MSFC	Israel, M. H.	NAG 8-498	3522
11	WASHINGTON UNIVERSTY	Johnson, W. G.	MSFC	Rekate, H. L.	NAS 8-27976	3538
11	WASHINGTON UNIVERSTY	Brinton, H. C.	HQ-EL	Smith, W. H.	NSG 7334	3546
11	WASHINGTON UNIVERSTY	Ormes, J. F.	HQ-EZ	Israel, M. H.	NGR 26-008-001	3541
11	WELLESLEY COLLEGE	Kondo, Y.	GSFC	Panek, R. J.	NAG 5-401	3299
11	WELLESLEY COLLEGE	Kondo, Y.	GSFC	Marenin, I. L.	NAG 5-438	3300
11	WESLEYAN UNIVERSITY	Kondo, Y.	GSFC	Philip, A. G.	NAG 5-443	2226
11	WESTRN KENTUCKY UNIV	Boggess, A.	GSFC	Hackney, K. R.	NSG 5238	2848
11	WHEATON COLLEGE	Kondo, Y.	GSFC	Barker, T.	NSG 5376	3303
11	WOODSHOLE OCEAN INST	Scott, D. H.	HQ-EL	Bowin, O.	NAGW 792	3312
11	WOODSHOLE OCEAN INST	Quaide, W. L.	HQ-EL	Bowin, C. O.	NASW 3770	3314
11	YALE UNIVERSITY	Butler, D. M.	HQ-EE	Demarque, P.	NAGW 777	2233
11	YALE UNIVERSITY	Owens, F. C.	HQ-LE	Demarque, P.	NGT 07-001-800	2240
12	ALABAMA A&M UNIV	Austin, J. G., Jr.	MSFC	Thompson, J. H.	NAS 8-36299	1011
12	ARIZONA STATE UNIV	Des Marais, D. J.	ARC	Yuen, G.	NCA 2-35401	1164
12	ARIZONA STATE UNIV	Owens, F. C.	HQ-LE	Greeley, R.	NGT 03-001-803	1173
12	JOHNS HOPKINS UNIV	Owens, F. C.	HQ-LB	Robinson, D. W.	NGT 21-001-801	2917
12	AUBURN UNIV-AUBURN	Gerron, R. A.	KSC	Tatarchuk, B. J.	NAS10-11027	1029
12	BOWIE STATE COLLEGE	Tasevoli, C. M.	GSFC	Rock, M.	NSG 5009	2882
12	BOWLING GRN STATE U	Owens, F. C.	HQ-LE	Srinivasan, V.	NGT 36-002-800	4027
12	CALIF INST OF TECH	Dietrich, J. W.	JSC	Epstein, S.	NAG 9-46	1330
12	CALIF INST OF TECH	Devincenzi, D. L.	HQ-EB	Yung, Y. L.	NAGW 254	1341
12	CASE WESTERN RESERVE	Serafini, T. T.	LERC	Ritchey, W. M.	NAG 3-163	4037
12	CASE WESTERN RESERVE	Reid, M. A.	LERC	Yeager, E. B.	NAG 3-219	4039
12	CASE WESTERN RESERVE	Abbey, K. M.	LERC	Litt, M. H.	NAG 3-234	4043
12	CASE WESTERN RESERVE	Fielder, W. L.	LERC	Anderson, A. B.	NAG 3-341	4056
12	CATHOLIC UNIVERSITY	Nava, D. F.	GSFC	Sanders, W. A.	NSG 5173	2260
12	CHRISTPHR NEWPRT COL	Rhinehart, R. P.	LARC	Sacks, L. J.	NAG 1-268	4863
12	CHRISTPHR NEWPRT COL	Conway, E. J.	LARC	Chang, C. K.	NAG 1-523	4866
12	COLLEGE OF WM & MARY	St Clair, T. L.	LARC	Orwoll, R. A.	NAG 1-144	4869
12	COLLEGE OF WM & MARY	Freeman, W. T., Jr.	LARC	Kranbuehl, D. E.	NAG 1-237	4871
12	COLLEGE OF WM & MARY	Sykes, G. F.	LARC	Orwoll, R. A.	NAG 1-593	4880
12	COLORADO SCH OF MINE	Bittker, D. A.	LERC	Daniel, S. R.	NAG 3-197	2084
12	CORNELL UNIVERSITY	Devincenzi, D. L.	HQ-EB	Usher, D. A.	NAGW 493	3782
12	CORNELL UNIVERSITY	Devincenzi, D. L.	HQ-EB	Sagan, C. E.	NGR 33-010-101	3801
12	DREXEL UNIVERSITY	Holland, A. C.	GSFC	Thornton, D. C.	NAG 5-620	4344
12	DREXEL UNIVERSITY	Bittker, D. A.	LERC	Cohen, R. S.	NAG 3-183	4342
12	GEORGIA SOUTHERN COL	Donn, B.	GSFC	Nelson, R. H.	NAG 5-496	2453
12	INDIANA U-BLOOMINGTN	Devincenzi, D. L.	HQ-EB	Hayes, J. M.	NGR 15-003-118	2651
12	LEHIGH UNIVERSITY	Chackerian, C.	ARC	Lovejoy, R. W.	NCA 2-10	4361
12	LONGWOOD COLLEGE	Young, P. R.	LARC	Barber, P. G.	NAG 1-357	4914
12	LONGWOOD COLLEGE	Fripp, A. L.	LARC	Barber, P. G.	NAG 1-498	4915
12	MASS INST OF TECH	Geib, D. S.	HQ-EB	Prinn, R. G.	NAGW 114	3187
12	MASS INST OF TECH	Devincenzi, D. L.	HQ-EB	Rich, A.	NGR 22-009-277	3252
12	MICHIGAN STATE UNIV	Seng, G. T.	LERC	Crouch, S. R.	NAG 3-93	3320
12	MICHIGAN STATE UNIV	Seng, G. T.	LERC	Enke, C. G.	NAG 3-107	3321
12	MICHIGAN TECH UNIV	Dreshfield, R. L.	LERC	Heckel, R. W.	NAG 3-216	3339
12	MICHIGAN TECH UNIV	Singer, J.	LERC	Cornilsen, B. C.	NAG 3-519	3345
12	MISS UNIV FOR WOMEN	St Clair, T. L.	LARC	Pratt, J. R.	NSG 1539	3488
12	OLD DOMINION UNIV	Baucom, R. M.	LARC	Hou, J. W.	NAG 1-561	4947
12	OLD DOMINION UNIV	Baucom, R. M.	LARC	Tiwari, S. N.	NAG 1-569	4948
12	OLD DOMINION UNIV	Phillips, D. H.	LARC	Ake, R. L.	NAG 1-596	4951
12	OLD DOMINION UNIV	Phillips, D. H.	LARC	Ake, R. L.	NSG 1393	4975
12	POLY INST OF NY	Golub, M. A.	ARC	Pearce, E. M.	NAG 2-229	3839
12	POLY INST OF NY	Devincenzi, D. L.	HQ-EB	Eirich, F. R.	NGR 33-006-070	3845



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12	PRINCETON UNIVERSITY	Brabbs, T. A.	LERC	Glassman, I.	NAG 3-310	3616
12	PURDUE UNIVERSITY	Browne, I. D.	JSC	Lipschutz, M. E.	NAG 9-48	2692
12	PURDUE UNIVERSITY	Lezberg, E.	LERC	Laurendeau, N. M.	NAG 3-360	2675
12	PURDUE UNIVERSITY	Hepp, A.	LERC	Kubiak, C. P.	NAG 3-586	2683
12	RENSSELAER POLY-NY	Seng, G. T.	GSFC	Lauer, J. L.	NAG 3-205	3852
12	RENSSELAER POLY-NY	Sheibley, D. W.	LERC	Moore, J. A.	NAG 3-199	3851
12	RENSSELAER POLY-NY	Devincenzi, D. L.	HQ-EB	Ferris, J. P.	NGR 33-018-148	3866
12	RUTGERS ST U-CAMDEN	Phillips, D. H.	LARC	Burke, L. A.	NAG 1-434	3649
12	SAN FRAN STATE UNIV	Devincenzi, D. L.	HQ-EB	Orenberg, J. B.	NAGW 324	1434
12	SAN JOSE STATE UNIV	Gilwee, W. J.	ARC	Kellman, R.	NCA 2-675304	1454
12	SAN JOSE STATE UNIV	Kourtides, D. A.	ARC	Ling, A. C.	NCC 2-56	1463
12	SAN JOSE STATE UNIV	Chang, S.	ARC	Ling, A. C.	NCC 2-153	1467
12	SAN JOSE STATE UNIV	Wydeven, T. J.	ARC	Shitze, L. A.	NCC 2-246	1477
12	SAN JOSE STATE UNIV	Wydeven, T. J.	ARC	Spitze, L. A.	NCC 2-261	1479
12	SO ILL UNIV-CARBONDL	Carle, G. C.	ARC	Phillips, J. B.	NCA 2-735201	2532
12	SO ILL UNIV-CARBONDL	Carle, G. C.	ARC	Phillips, J. B.	NCA 2-735401	2533
12	SOUTHERN UNIV-SHRVPT	Byvik, C. E.	LARC	Miles, A. M.	NAG 1-356	2866
12	STATE UNIV NY-ALBANY	Jones, J. J.	LARC	Saturno, A. F.	NAG 1-323	3872
12	STATE U NY-STONY BRK	Chang, S.	ARC	Scattergood, T. W.	NCC 2-311	3926
12	STATE U NY-STONY BRK	Sutter, J. K.	LERC	Gelernter, H. L.	NAG 3-651	3910
12	STATE U NY-STONY BRK	Brabbs, T. A.	LERC	Yang, C. H.	NCC 3-2	3927
12	STATE U NY-STONY BRK	De Vincenzi, D. L.	HQ-EB	Owens, T.	NAGW 725	3919
12	TUSKEGEE INSTITUTE	Bryan, C. J.	KSC	Dillon, I. G.	NAG10-8	1041
12	TUSKEGEE INSTITUTE	Bryan, C. J.	KSC	Dillion, I. G.	NAG10-19	1042
12	UNIV OF AKRON	Hergenrother, P. M.	LARC	Harris, F. W.	NAG 1-448	4199
12	UNIV ALA-BIRMINGHAM	Devincenzi, D. L.	HQ-EB	Lacey, J. C., Jr.	NGR 01-010-001	1052
12	UNIV ALA-BIRMINGHAM	Owens, F. C.	HQ-LE	McAnulty, M.	NGT 02-002-801	1054
12	UNIV ALA-HUNTSVILLE	Peters, P. N.	MSFC	Gregory, J. C.	NAS 8-36645	1096
12	UNIV OF ARIZONA	Browne, I. D.	JSC	Boynton, W. V.	NAG 9-37	1213
12	UNIV OF ARIZONA	Dietrich, J. W.	JSC	Wilkening, L. L.	NAG 9-38	1214
12	UNIV OF ARIZONA	Browne, I. D.	JSC	Drake, M. J.	NAG 9-39	1215
12	UNIV OF ARIZONA	Quaide, W. L.	HQ-EL	Boynton, W. V.	NAGW 669	1244
12	UNIV CALIF-BERKELEY	MacElroy, R. D.	ARC	Tinoco, I.	NCA 2-50402	1720
12	UNIV CALIF-BERKELEY	Kondo, Y.	GSFC	Cohen, M.	NAG 5-709	1681
12	UNIV CALIF-BERKELEY	Geib, D. S.	HQ-EB	Jukes, J. H.	NGR 05-003-460	1741
12	UNIV CALIF-L ANGELES	Browne, I. D.	JSC	Kerridge, J. F.	NAG 9-27	1820
12	UNIV CALIF-L ANGELES	Devincenzi, D. L.	HQ-EB	Kerridge, J. F.	NAGW 347	1832
12	UNIV CALIF-L ANGELES	Owens, F. C.	HQ-EL	Nicol, M. F.	NGT 05-006-801	1866
12	UNIV CALIF-SAN DIEGO	Jaffe, R. L.	ARC	Wilson, K. R.	NAG 2-249	1886
12	UNIV CALIF-SAN DIEGO	Browne, I. D.	JSC	Arnold, J. R.	NAG 9-33	1902
12	UNIV CALIF-SAN DIEGO	Browne, I. D.	JSC	Marti, K.	NAG 9-41	1903
12	UNIV OF CHICAGO	Kondo, Y.	GSFC	York, D. G.	NAG 5-286	2539
12	UNIV OF CHICAGO	Owens, F. C.	HQ-LE	Clayton, R. N.	NGT 14-020-805	2588
12	UNIV OF CHICAGO	Owens, F. C.	HQ-LE	Clayton, R. N.	NGT 14-020-806	2589
12	UNIV OF HAWAII-MANOA	Devincenzi, D. L.	HQ-EB	Folsome, C. E.	NGR 12-001-109	2499
12	UNIV HOUSTON-HOUSTON	Owens, F. C.	HQ-LB	Middleditch, B. S.	NGT 44-005-804	4709
12	UNIV ILLINOIS-URBANA	Devincenzi, D. L.	HQ-EB	Woese, C. R.	NSG 7044	2637
12	UNIV MARYLAND-COL PK	Hochstein, L. I.	ARC	Ponnamperuma, C.	NCA 2-420401	3009
12	UNIV MARYLAND-COL PK	Gentry, B. M.	GSFC	Wilkerson, T. D.	NAG 5-222	2946
12	UNIV MARYLAND-COL PK	Donn, B. D.	GSFC	Khanna, R. K.	NSG 5172	3039
12	UNIV MARYLAND-COL PK	Seng, G. T.	LERC	Adler, I.	NAG 3-192	2937
12	UNIV MARYLAND-COL PK	Devincenzi, D. L.	HQ-EB	Ponnamperuma, C.	NAGW 673	2986
12	UNIV MARYLAND-COL PK	Devincenzi, D. L.	HQ-EB	Ponnamperuma, C.	NASW 3843	3007
12	UNIV MARYLAND-COL PK	Devincenzi, D. L.	HQ-EB	Ponnamperuma, C. A.	NGR 21-002-317	3025
12	UNIV OF MIAMI	Devincenzi, D. L.	HQ-EB	Fox, S. W.	NGR 10-007-008	2395
12	UNIV MICH-ANN ARBOR	Daunton, N.	ARC	Anderson, D. J.	NAG 2-185	3357
12	UNIV MICH-ANN ARBOR	Devincenzi, D. L.	HQ-EB	Walker, J. C.	NAGW 176	3387
12	UNIV MICH-ANN ARBOR	Devincenzi, D. L.	HQ-EB	Kuhn, W. R.	NSG 7308	3426
12	UNIV MO-ROLLA	Sutton, K.	LARC	Biolsi, L., Jr.	NAG 1-380	3505
12	UNIV OF NOTRE DAME	Jaffe, R. L.	ARC	Huo, W. M.	NCC 2-147	2724

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12	UNIV OF PENNSYLVANIA	Banks, B. A.	LERC	Forsman, W. C.	NAG 3-435	4429
12	UNIV OF PENNSYLVANIA	Bittker, D.	LERC	Seider, W. D.	NAG 3-652	4430
12	UNIV OF PITTSBURGH	Hampson, R. F.	HQ-EE	Kaufman, F.	NGR 39-011-161	4456
12	UNIV OF QUEENSLAND	Sykes, G. F.	LARC	O'donnell, J. H.	NAGW 503	5265
12	UNIV OF SANTA CLARA	Altman, R. L.	ARC	Saad, M. A.	NCA 2-685302	2049
12	UNIV OF SANTA CLARA	Chang, S.	ARC	White, D. H.	NCC 2-166	2060
12	UNIV OF SANTA CLARA	Lawless, J. G.	ARC	Sweeney, M. A.	NCC 2-271	2063
12	UNIV SO MISSISSIPPI	Flood, D. J.	LERC	Howell, J. E.	NAG 3-587	3491
12	UNIV TEXAS-AUSTIN	Jones, W. R.	LERC	Lagow, R. J.	NAG 3-602	4739
12	UNIV OF WASHINGTON	Chang, S.	ARC	Macklin, J. W.	NCC 2-268	5152
12	UNIV OF WYOMING	Gilwee, W. J.	ARC	Adams, D. F.	NAS 2-11612	5259
12	UTAH STATE UNIV	Lynch, J. T.	HQ-EE	Torr, D. G.	NAGW 406	4848
12	VIRGINIA COMNWLTH U	Hergenrother, P. M.	LARC	Bass, R. G.	NAG 1-239	5023
12	VIRGINIA COMNWLTH U	Stoakley, D. M.	LARC	Shillady, D. D.	NAG 1-435	5025
12	VIRGINIA COMNWLTH U	Conway, E. J.	LARC	Ottenbrite, R. M.	NAG 1-458	5026
12	VIRGINIA COMNWLTH U	Conway, E. J.	LARC	Vallarino, L. M.	NAG 1-594	5027
12	VIRGINIA POLY INST	Seng, G. T.	LERC	Dorn, H. C.	NAG 3-517	5075
12	WAKE FOREST UNIV	Phillips, D. H.	LARC	Jackels, C. F.	NCC 1-55	4022
12	YALE UNIVERSITY	Devincenzi, D. L.	HQ-EB	Morowitz, H. J.	NAGW 251	2232
13	ALABAMA A&M UNIV	Parnell, T. A.	MSFC	McGuire, S. C.	NAG 8-27	1003
13	ALABAMA A&M UNIV	Randall, J. L.	MSFC	Chang, K.	NAG 8-45	1007
13	ALABAMA A&M UNIV	Owens, F. C.	HQ-LB	George, M. C.	NGT 01-001-801	1012
13	ARIZONA STATE UNIV	Mantenieks, M. A.	LERC	Parsons, M. L.	NAG 3-252	1134
13	ARIZONA STATE UNIV	Owens, F. C.	HQ-LB	Moore, C. B.	NGT 03-001-801	1171
13	JOHNS HOPKINS UNIV	Early, L. J.	GSFC	Feldman, P. D.	NAG 5-619	2897
13	JOHNS HOPKINS UNIV	Fowler, W. S.	GSFC	Fastie, W. G.	NAS 5-25358	2908
13	JOHNS HOPKINS UNIV	Heyman, J. S.	LARC	Wagner, J. W.	NAG 1-504	2886
13	JOHNS HOPKINS UNIV	Behannon, K. W.	HQ-EE	Williams, D. J.	NAGW 497	2903
13	JOHNS HOPKINS UNIV	Lynch, J. T.	HQ-EE	Potemra, T. A.	NSG 7055	2921
13	JOHNS HOPKINS UNIV	Quaide, W. L.	HQ-EL	Krimigis, S. M.	NAGW 154	2899
13	JOHNS HOPKINS UNIV	Spicer, D. S.	HQ-EZ	Rust, D.	NAGW 522	2904
13	ATLANTA UNIVERSITY	Jalufka, N. W.	LARC	Martin, B. J.	NAG 1-411	2402
13	AUBURN UNIV-AUBURN	Guest, S. H.	MSFC	Cochran, J. E.	NAG 8-532	1015
13	AUBURN UNIV-AUBURN	Little, S. A.	MSFC	Fromhold, A. T.	NAS 8-36471	1027
13	AUBURN UNIV-AUBURN	Owens, F. C.	HQ-LE	Barnes, P.	NGT 01-003-802	1031
13	BOSTON UNIVERSITY	Acuno, M. H.	GSFC	Mendillo, M.	NAG 5-490	3050
13	BOSTON UNIVERSITY	Early, L. J.	GSFC	Mendillo, M.	NAG 5-623	3052
13	BOWIE STATE COLLEGE	Caruso, A. J.	GSFC	Bhatia, M. S.	NGR 21-027-010	2880
13	BROOKLYN COLLEGE	Townsend, L. W.	LARC	Franco, V.	NAG 1-418	3688
13	BROWN UNIVERSITY	Degnan, J. J.	GSFC	Lawandy, N. M.	NAG 5-526	4464
13	BROWN UNIVERSITY	Norum, T. D.	LARC	Liu, J. T.	NAG 1-379	4462
13	BROWN UNIVERSITY	Owens, F. C.	HQ-LE	Lawandy, N.	NGT 40-002-802	4483
13	CALIF INST OF TECH	Cooper, D. M.	ARC	McKoy, V.	NCC 2-319	1364
13	CALIF INST OF TECH	Bullock, G. D.	GSFC	Zirin, H.	NAG 5-508	1324
13	CALIF INST OF TECH	Wales, R. O.	GSFC	Stone, E. C.	NAS 5-20721	1350
13	CALIF INST OF TECH	Dietrich, J. W.	JSC	Albee, A. L.	NGL 05-002-338	1370
13	CALIF INST OF TECH	Brinton, H. C.	HQ-EL	Ingersoll, A. P.	NAGW 159	1336
13	CALIF INST OF TECH	Owens, F. C.	HQ-LE	Phillips, T. G.	NGT 05-002-802	1374
13	CAL STATE U-FULLERTN	Browne, I. D.	JSC	Woolum, D. S.	NAG 9-57	1396
13	CAL STATE U-NRTHRDGE	Thomas, R. J.	HQ-EZ	Chapman, G. A.	NAGW 548	1404
13	CAL STATE U-NRTHRDGE	Spicer, D. S.	HQ-EZ	Chapman, G. A.	NAGW 688	1406
13	CASE WESTERN RESERVE	Kosmahl, H. G.	LERC	Hazony, D.	NAG 3-24	4032
13	CASE WESTERN RESERVE	Purvis, C. K.	LERC	Gordon, W. L.	NAG 3-352	4057
13	CASE WESTERN RESERVE	Powell, J. A.	LERC	Fung, C. D.	NAG 3-389	4060
13	CASE WESTERN RESERVE	Ferguson, D. C.	LERC	Eck, T. G.	NAG 3-426	4066
13	CASE WESTERN RESERVE	Powell, J. A.	LERC	Fung, C. D.	NAG 3-490	4077
13	CASE WESTERN RESERVE	Mirtich, M. J.	LERC	Angus, J. C.	NAG 3-505	4080
13	CASE WESTERN RESERVE	Goldstein, M. E.	LERC	Reshotko, E.	NAG 3-640	4092
13	CASE WESTERN RESERVE	Haugland, E.	LERC	Segall, B.	NCC 3-25	4100
13	CASE WESTERN RESERVE	Staskus, J. V.	LERC	Gordan, W. L.	NSG 3197	4117

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13	CASE WESTERN RESERVE	Owens, F. C.	HQ-LB	Taylor, P.	NGT 36-027-801	4109
13	CATHOLIC UNIVERSITY	Lynch, J. T.	HQ-EE	Whang, Y. C.	NAGW 738	2257
13	CATHOLIC UNIVERSITY	Spicer, D. S.	HQ-EZ	Whang, Y. C.	NAGW 579	2256
13	CHRISTPHR NEWPRT COL	Heyman, J. S.	LARC	Smith, B. T.	NAG 1-431	4864
13	CHRISTPHR NEWPRT COL	Byvik, C. E.	LARC	Buoncristiani, A. M.	NAG 1-488	4865
13	CHRISTPHR NEWPRT COL	Byvik, C. E.	LARC	Buoncristiani, A. M.	NAG 1-585	4867
13	CITY COLLEGE OF N Y	Cassen, P. M.	ARC	Yuan, C.	NCA 2-150401	3698
13	CITY COLLEGE OF N Y	Byrik, C. E.	LARC	Alfano, R. R.	NAG 1-499	3693
13	CITY COLLEGE OF N Y	Lauver, R. W.	LERC	Alfano, R. R.	NAG 3-130	3695
13	CLARKSON UNIVERSITY	Fallon, R. A.	MSFC	Subramanian, R. S.	NAS 8-32944	3706
13	CLEVELAND STATE UNIV	Weinberg, I.	LERC	Goradia, C.	NAG 3-138	4119
13	CLEVELAND STATE UNIV	Wintucky, E. G.	LERC	Schlosser, H.	NAG 3-372	4127
13	COLLEGE OF WM & MARY	Powell, C. A.	LARC	Hubbard, H. H.	NAG 1-166	4870
13	COLLEGE OF WM & MARY	Heath, D. M.	LARC	Welch, C.	NCC 1-50	4885
13	COLLEGE OF WM & MARY	Heyman, J. S.	LARC	Namkung, M.	NCC 1-75	4889
13	COLLEGE OF WM & MARY	Rinsland, C. P.	LARC	Benner, D. C.	NCC 1-80	4892
13	COLLEGE OF WM & MARY	Lynch, J. T.	HQ-EE	Montgomery, D. C.	NSG 7416	4899
13	COLORADO STATE UNIV	Exton, R. J.	LARC	She, C. Y.	NSG 1594	2111
13	COLORADO STATE UNIV	Pouch, J. J.	LERC	Lile, D. L.	NAG 3-633	2089
13	COLORADO STATE UNIV	Rawlin, V. K.	LERC	Kaufman, H. R.	NSG 3011	2112
13	COLUMBIA UNIVERSITY	Early, L. J.	GSFC	Novick, R.	NAG 5-618	3725
13	COLUMBIA UNIVERSITY	Gergely, T. E.	HQ-EZ	Chanan, G. A.	NAGW 588	3733
13	CORNELL UNIVERSITY	Early, L. J.	GSFC	Kintner, P. M.	NAG 5-601	3773
13	CORNELL UNIVERSITY	Conrath, B. J.	GSFC	Gierasch, P. J.	NAS 5-23236	3791
13	CORNELL UNIVERSITY	Butler, D. M.	HQ-EE	Sudan, R. N.	NAGW 90	3776
13	CORNELL UNIVERSITY	Lynch, J. T.	HQ-EE	Kelley, M. C.	NAGW 647	3787
13	DUKE UNIVERSITY	Castles, S. H.	GSFC	Meyer, H.	NAG 5-379	3959
13	EASTERN KENTUCKY U	Fishman, G. J.	MSFC	Laird, C. E.	NAS 8-35180	2834
13	FISK UNIVERSITY	Kroes, R. L.	MSFC	Silberman, E.	NAG 8-25	4511
13	FISK UNIVERSITY	Kroes, R. L.	MSFC	Silberman, E.	NSG 8060	4513
13	FLORIDA A&M UNIV	Temkin, A.	GSFC	Jones, H. N.	NSG 5307	2325
13	GEORGIA INST OF TECH	Hall, J. B.	LARC	Colwell, G. T.	NAG 1-551	2414
13	GEORGIA INST OF TECH	Preisser, J. S.	LARC	Pierce, A. D.	NAG 1-566	2416
13	GEORGIA INST OF TECH	Robertson, J. B.	LARC	Summers, C. J.	NAG 1-586	2417
13	GEORGIA INST OF TECH	Krawczonek, W. M.	LERC	Summers, C. J.	NAG 3-442	2423
13	GEORGIA INST OF TECH	Dolan, F.	MSFC	Grenga, H. E.	NAS 8-35048	2444
13	HAMPDEN-SYDNEY COL	Sundberg, G. R.	LERC	Joyner, W. T.	NAG 3-605	4903
13	HAMPTON INSTITUTE	Conway, E. J.	LARC	Venable, D. D.	NAG 1-400	4904
13	HAMPTON INSTITUTE	Jalufka, N. W.	LARC	Han, K. S.	NAG 1-441	4906
13	HAMPTON INSTITUTE	Townsend, L. W.	LARC	Buck, W.	NAG 1-477	4908
13	HAMPTON INSTITUTE	Jalufka, N. W.	LARC	Han, K. S.	NSG 1595	4913
13	HARVARD UNIVERSITY	Reed, E. I.	GSFC	Parkinson, W. H.	NAG 5-144	3071
13	HARVARD UNIVERSITY	Early, L. J.	GSFC	Parkinson, W. H.	NSG 5128	3103
13	HARVARD UNIVERSITY	Eberstein, I.	GSFC	Parkinson, W. H.	NSG 5176	3104
13	HARVARD UNIVERSITY	Gardner, L. B.	MSFC	Spaepen, F.	NAS 8-35416	3093
13	HARVARD UNIVERSITY	Spicer	HQ-EZ	Parkinson, W. H.	NGL 22-007-006	3097
13	HOWARD UNIVERSITY	Osantowski, J. F.	GSFC	Metz, R. N.	NAG 5-79	2298
13	HOWARD UNIVERSITY	Yin, L. I.	GSFC	Tsang, T.	NAG 5-156	2299
13	HOWARD UNIVERSITY	Powell, J. A.	LERC	Spencer, M. G.	NAG 3-431	2297
13	INDIANA U-BLOOMINGTN	O'neal, R. L.	LARC	Ahlen, S. P.	NAG 1-584	2640
13	INDIANA UNIV OF PA	Krabill, W. B.	GSFC	Berry, R. E.	NAG 5-630	4352
13	INDIANA UNIV OF PA	Krabill, W. B.	GSFC	Berry, R. E.	NAG 5-631	4353
13	JOHN CARROLL UNIV	Baumbick, R. J.	LERC	Carome, E. F.	NAG 3-509	4151
13	MASS INST OF TECH	Kaiser, M. L.	GSFC	Staelin, D. H.	NAG 5-537	3175
13	MASS INST OF TECH	Petuchowski, S. J.	GSFC	Sollner, T. G.	NAG 5-717	3178
13	MASS INST OF TECH	Ogilvie, K. W.	GSFC	Lazarus, A. J.	NAS 5-27261	3213
13	MASS INST OF TECH	Mather, J.	GSFC	Weiss, R.	NAS 5-27591	3216
13	MASS INST OF TECH	Alexander, J. K.	GSFC	Staelin, D. H.	NAS 5-28410	3217
13	MASS INST OF TECH	Chang, F.	JSC	Montgomery, D. B.	NAS 9-16571	3235
13	MASS INST OF TECH	Chang, F.	JSC	Yan, T. F.	NAS 9-17377	3239

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13	MASS INST OF TECH	Katzberg, S. J.	LARC	Freed, C.	NAG 1-164	3110
13	MASS INST OF TECH	Brooks, T. F.	LARC	Harris, W. L.	NSG 1583	3260
13	MASS INST OF TECH	Terdan, F. F.	LERC	Holm, H.	NAG 3-283	3142
13	MASS INST OF TECH	Banks, B. A.	LERC	Dresselhaus, M. S.	NAG 3-439	3150
13	MASS INST OF TECH	Kolecki, J. C.	LERC	Sanchez, M. M.	NAG 3-24649	3210
13	MASS INST OF TECH	Lynch, J. T.	HQ-EE	Lazarus, A. J.	NGL 22-009-015	3246
13	MASS INST OF TECH	Spicer, D. S.	HQ-EZ	Olbert, S.	NAGW 375	3191
13	MASS INST OF TECH	Owens, F. C.	HQ-LB	Lewin, W.	NGT 22-009-902	3258
13	MIAMI UNIVERSITY	Deyoung, R. J.	LARC	Wells, W. E.	NCC 1-12	4158
13	MICHIGAN STATE UNIV	Gaier, J.	LERC	Solin, S. A.	NAG 3-595	3327
13	MICHIGAN STATE UNIV	Spicer, D. S.	HQ-EZ	Stein, R. F.	NSG 7293	3338
13	NEW YORK UNIVERSITY	Bullock, G. D.	GSFC	Hoffert, M. I.	NAG 5-503	3829
13	NORFOLK STATE UNIV	Winfree, W. P.	LARC	Mattix, L.	NAG 1-524	4916
13	NO CAR A&T STATE U	Magee, C. J.	LARC	Gilchrist, J.	NAG 1-414	3973
13	N CAR CENTRAL UNIV	Kendall, B. M.	LARC	Jones, C. R.	NAG 1-187	3980
13	NO CAROLINA STATE U	Magee, C. J.	LARC	Bedair, S. M.	NAG 1-285	3984
13	NO CAROLINA STATE U	Long, E. R., Jr.	LARC	Fornes, R. E.	NSG 1562	4010
13	NORTHWESTERN UNIV	Bill, R. C.	LERC	Nemat-nasser, S.	NAG 3-134	2519
13	NORTHWESTERN UNIV	Stencel, R. E.	HQ-EZ	Taam, R. E.	NAGW 768	2527
13	OHIO STATE UNIV	Baumbick, R. J.	LERC	Collins, S. A., Jr.	NSG 3302	4190
13	OLD DOMINION UNIV	Fowler, W. B.	GSFC	Becher, J.	NSG 5289	4980
13	OLD DOMINION UNIV	Lebel, P. J.	LARC	Copeland, G. E.	NAG 1-1	4918
13	OLD DOMINION UNIV	Jalufka, N. W.	LARC	Lakdawala, V. K.	NAG 1-476	4941
13	OLD DOMINION UNIV	Browell, E. V.	LARC	Copeland, G. E.	NCC 1-32	4957
13	OLD DOMINION UNIV	Townsend, L. W.	LARC	Khandelwal, G. S.	NCC 1-42	4959
13	OLD DOMINION UNIV	Long, S. T.	LARC	Harries, W. L.	NCC 1-90	4964
13	OLD DOMINION UNIV	Melfi, L. T., Jr.	LARC	Brock, F. J.	NCC 1-94	4965
13	OLD DOMINION UNIV	Melfi, L. T., Jr.	LARC	Brock, F. J.	NSG 1271	4973
13	OLD DOMINION UNIV	Wilson, J. W.	LARC	Harries, W. L.	NSG 1568	4978
13	OLD DOMINION UNIV	Owens, F. C.	HQ-LE	Khandelwal, G. S.	NGT 47-003-803	4971
13	PENN STATE U-UNIV PK	Staskus, J. V.	LERC	Kendall, B. R.	NSG 3301	4425
13	PENN STATE U-UNIV PK	Norman, R. E.	MSFC	Treaster, A. L.	NAS 8-35446	4401
13	PENN STATE U-UNIV PK	Lynch, J. T.	HQ-EE	Nisbet, J. S.	NGL 39-009-003	4415
13	POLY INST OF NY	Lynch, J. T.	HQ-EE	Gross, S. H.	NAGW 284	3843
13	PRAIRIE VIEW A&M U	Herman, C. F.	JSC	Knighton, T.	NAS 9-17136	4579
13	PRINCETON UNIVERSITY	Early, L. J.	GSFC	Jenkins, E. B.	NAG 5-616	3623
13	PRINCETON UNIVERSITY	Chai, A. T.	LERC	Saville, D. A.	NAG 3-259	3614
13	PRINCETON UNIVERSITY	Clarke, J. T.	MSFC	Langer, W. D.	NAG 8-521	3624
13	PRINCETON UNIVERSITY	Owens, F. C.	HQ-LB	Perry, M.	NGT 31-001-802	3643
13	PURDUE UNIVERSITY	Curran, F.	LERC	Reifenberger, R.	NAG 3-496	2679
13	RICE UNIVERSITY	Bullock, G. D.	GSFC	Reiff, P. H.	NAG 5-302	4583
13	RICE UNIVERSITY	Taylor, H. A., Jr.	GSFC	Cloutier, P. A.	NAS 5-23338	4594
13	RICE UNIVERSITY	Jost, R. J.	JSC	Gordon, W. E.	NAS 9-17273	4600
13	RICE UNIVERSITY	Lynch, J. T.	HQ-EE	Hill, T. W.	NAGW 168	4590
13	RICE UNIVERSITY	Lynch, J. T.	HQ-EE	Freeman, J. W.	NGL 44-006-012	4602
13	RICE UNIVERSITY	Lynch, J. T.	HQ-EE	Reiff, P. H.	NGR 44-006-137	4603
13	RICE UNIVERSITY	Owens, F. C.	HQ-LB	Reiff, P. H.	NGT 44-006-805	4607
13	STANFORD UNIVERSITY	Kittel, P.	ARC	Fairbanks, W. M.	NAG 2-276	1503
13	STANFORD UNIVERSITY	Pulliam, T. H.	ARC	Spreiter, J. R.	NCA 2-72	1568
13	STANFORD UNIVERSITY	Lomax, H.	ARC	Spreiter, J. R.	NCA 2-73	1569
13	STANFORD UNIVERSITY	Cooper, D. M.	ARC	Tiller, W. A.	NCC 2-125	1612
13	STANFORD UNIVERSITY	Early, L. J.	GSFC	Timothy, J. G.	NAG 5-622	1519
13	STANFORD UNIVERSITY	Early, L. J.	GSFC	Walker, A. B.	NSG 5131	1657
13	STANFORD UNIVERSITY	Chai, A. T.	LERC	Hesselink, L.	NAG 3-261	1511
13	STANFORD UNIVERSITY	Chai, A. T.	LERC	Hesselink, L.	NAG 3-557	1515
13	STANFORD UNIVERSITY	Decker, R.	MSFC	Ereritt, C. W.	NAG 8-26	1520
13	STANFORD UNIVERSITY	Potter, R.	MSFC	Everitt, C. W.	NAS 8-34619	1547
13	STANFORD UNIVERSITY	Jones, C. T.	MSFC	Banks, P. M.	NAS 8-35350	1549
13	STANFORD UNIVERSITY	Neighbors, J. K.	MSFC	Everitt, C. W.	NAS 8-36125	1552
13	STANFORD UNIVERSITY	Butler, D. M.	HQ-EE	Sturrock, P. A.	NAGW 92	1523

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13	STANFORD UNIVERSITY	Lynch, J. T.	HQ-EE	Spreiter, J. R.	NAGW 278	1526
13	STANFORD UNIVERSITY	Lynch, J. T.	HQ-EE	Inan, U. S.	NAGW 653	1538
13	STANFORD UNIVERSITY	Lynch, J. T.	HQ-EE	Inan, U. S.	NAGW 759	1539
13	STANFORD UNIVERSITY	Lynch, J. T.	HQ-EE	Helliwell, R. A.	NGL 05-020-008	1639
13	STANFORD UNIVERSITY	Brinton, H. C.	HQ-EL	Eshleman, V. R.	NAGW 152	1524
13	STANFORD UNIVERSITY	Spicer, D. S.	HQ-EZ	Timothy, J. G.	NAGW 540	1531
13	STANFORD UNIVERSITY	Spicer, D. S.	HQ-EZ	Sturrock, P. A.	NGL 05-020-272	1643
13	STANFORD UNIVERSITY	Owens, F. C.	HQ-LB	Petrosian, V.	NGT 05-020-804	1650
13	STANFORD UNIVERSITY	Owens, F. C.	HQ-LB	Bates, C. W.	NGT 05-020-805	1651
13	STATE U NY-BINGHAMTN	Owens, F. C.	HQ-LB	Wu, F.	NGT 33-188-802	3894
13	STATE UNIV NY-BUFFAL	Long, S. T.	LARC	Rustgi, M. L.	NAG 1-442	3898
13	STATE UNIV NY-BUFFAL	Long, S. T.	LARC	Rustgi, M. L.	NAG 1-577	3899
13	STATE U NY-STONY BRK	Fimmel, R. O.	ARC	Fox, J. L.	NAG 2-329	3909
13	STATE U NY-STONY BRK	Ramaty, R.	GSFC	Forman, M. A.	NAS 5-26395	3922
13	STATE U NY-STONY BRK	Dietrich, J. W.	JSC	Lindsley, D. H.	NAG 9-31	3913
13	TEXAS A&M UNIVERSITY	Yu, J. C.	LARC	Morrison, G. L.	NAG 1-112	4619
13	TEXAS TECH UNIV	Owens, F. C.	HQ-LB	Su, R.	NGT 44-011-801	4677
13	TUFTS UNIVERSITY	Bullock, G. D.	GSFC	Lang, K. R.	NAG 5-501	3281
13	UNIV ALA-BIRMINGHAM	Stencel, R. E.	HQ-EZ	Wdowiak, T. J.	NAGW 749	1049
13	UNIV ALA-BIRMINGHAM	Owens, F. C.	HQ-LE	Agosti, D. G.	NGT 02-002-802	1055
13	UNIV ALA-HUNTSVILLE	Bullock, G. D.	GSFC	Emslie, A. G.	NAG 5-500	1058
13	UNIV ALA-HUNTSVILLE	Kolecki, J. C.	LERC	Olsen, R. C.	NAG 3-620	1056
13	UNIV ALA-HUNTSVILLE	Curreri, P. A.	MSFC	Wu, M. K.	NAG 8-32	1059
13	UNIV ALA-HUNTSVILLE	Leslie, F.	MSFC	Hung, R. J.	NAG 8-35	1060
13	UNIV ALA-HUNTSVILLE	Till, W. A.	MSFC	Wessling, F. C.	NAG 8-46	1061
13	UNIV ALA-HUNTSVILLE	Chappell, C. R.	MSFC	Comfort, R. H.	NAS 8-33982	1074
13	UNIV ALA-HUNTSVILLE	Black, R. E.	MSFC	Workman, G. L.	NAS 8-34530	1076
13	UNIV ALA-HUNTSVILLE	Lehoczy, S. L.	MSFC	Baird, J. K.	NAS 8-34957	1078
13	UNIV ALA-HUNTSVILLE	Roberts, W. T.	MSFC	Wu, S. T.	NAS 8-35304	1080
13	UNIV ALA-HUNTSVILLE	Chappell, C. R.	MSFC	Olsen, R. C.	NAS 8-35339	1082
13	UNIV ALA-HUNTSVILLE	Parnell, T. A.	MSFC	Gregory, J. C.	NAS 8-35354	1083
13	UNIV ALA-HUNTSVILLE	Parr, R. A.	MSFC	Workman, G. L.	NAS 8-36485	1095
13	UNIV ALA-HUNTSVILLE	Lynch, J. T.	HQ-EE	Wu, S. T.	NAGW 743	1068
13	UNIV ALA-HUNTSVILLE	Spicer, D. S.	HQ-EZ	Wu, S. T.	NAGW 9	1066
13	UNIV ALA-HUNTSVILLE	Spicer, D. S.	HQ-EZ	Emslie, A. G.	NAGW 294	1067
13	UNIV ALA-HUNTSVILLE	Owens, F. C.	HQ-LB	Horowitz, J. L.	NGT 01-008-800	1100
13	UNIV ALA-HUNTSVILLE	Owens, F. C.	HQ-LB	Coleman, W. R.	NGT 01-008-802	1101
13	UNIV ALASKA-FAIRBNKS	Acuna, M. H.	GSFC	Hallinan, T. J.	NAG 5-493	1113
13	UNIV ALASKA-FAIRBNKS	O'brien, J. J.	GSFC	Rees, M. H.	NAS 5-26868	1118
13	UNIV ALASKA-FAIRBNKS	Lynch, J. T.	HQ-EE	Hallinan, T. J.	NAGW 635	1117
13	UNIV OF ARIZONA	Quenther, B.	GSFC	Slater, P. N.	NAG 5-196	1197
13	UNIV OF ARIZONA	Early, L. J.	GSFC	Ksieh, K. C.	NAG 5-625	1210
13	UNIV OF ARIZONA	O'brien, J. J.	GSFC	Sonett, C. P.	NAS 5-26869	1260
13	UNIV OF ARIZONA	Arrison, A.	LERC	Stegeman, G. I.	NAG 3-392	1192
13	UNIV OF ARIZONA	Christian, H. J.	MSFC	Krider, E. P.	NAS 8-36477	1265
13	UNIV OF ARIZONA	Lynch, J. T.	HQ-EE	Hood, L. L.	NAGW 157	1220
13	UNIV OF ARIZONA	Tuyahov, A. J.	HQ-EL	Bier, M.	NSG 7333	1303
13	UNIV CALIF-BERKELEY	McCreight, C. R.	ARC	Arens, J. F.	NAG 2-321	1665
13	UNIV CALIF-BERKELEY	Wales, R. O.	GSFC	Heckman, H. H.	NAS 5-20995	1702
13	UNIV CALIF-BERKELEY	O'brien, J. J.	GSFC	Mozer, F. S.	NAS 5-26847	1704
13	UNIV CALIF-BERKELEY	O'brien, J. J.	GSFC	Lin, R. P.	NAS 5-26855	1705
13	UNIV CALIF-BERKELEY	Browne, I. D.	JSC	Reynolds, J. H.	NAG 9-34	1686
13	UNIV CALIF-BERKELEY	Chai, A. T.	LERC	Concus, P.	NAG 3-146	1669
13	UNIV CALIF-BERKELEY	Rosendhal, J. D.	HQ-E	Price, P. B.	NGL 05-003-497	1737
13	UNIV CALIF-BERKELEY	Devincenzi, D. L.	HQ-EB	Betz, A. L.	NAGW 681	1697
13	UNIV CALIF-BERKELEY	Lynch, J. T.	HQ-EE	Hudson, M. K.	NAGW 564	1695
13	UNIV CALIF-BERKELEY	Shawhan, S. D.	HQ-EE	De Pater, I.	NAGW 776	1699
13	UNIV CALIF-BERKELEY	Spicer, D. S.	HQ-EZ	Lin, R. P.	NAGW 516	1693
13	UNIV CALIF-BERKELEY	Owens, F. C.	HQ-LE	Bowyer, C. S.	NGT 05-003-806	1749
13	UNIV CALIF-BERKELEY	Owens, F. C.	HQ-LB	Townes, C. H.	NGT 05-003-803	1746

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
13	UNIV CALIF-IRVINE	Bullock, G. D.	GSFC	Steinolfson, R. S.	NAG 5-507	1780
13	UNIV CALIF-IRVINE	Arrison, A.	LERC	Mills, D. L.	NAG 3-250	1777
13	UNIV CALIF-IRVINE	Arrison, A.	LERC	Rutledge, J. E.	NAG 3-524	1778
13	UNIV CALIF-IRVINE	Butler, D. M.	HQ-EE	Hoven, G. V.	NAGW 93	1781
13	UNIV CALIF-IRVINE	Spicer, D. S.	HQ-EZ	Van Hoven, G.	NSG 7375	1789
13	UNIV CALIF-L ANGELES	Lee, J. M.	ARC	Frederking, T. H.	NCC 2-305	1858
13	UNIV CALIF-L ANGELES	Acuna, M. H.	GSFC	Russell, C. T.	NAG 5-536	1814
13	UNIV CALIF-L ANGELES	Bullock, G. D.	GSFC	Maggs, J. E.	NAS 5-25039	1840
13	UNIV CALIF-L ANGELES	O'brien, J. J.	GSFC	McPherron, R. L.	NAS 5-26852	1844
13	UNIV CALIF-L ANGELES	O'brien, J. J.	GSFC	Ashour-abdalla G. M.	NAS 5-26871	1845
13	UNIV CALIF-L ANGELES	Lynch, J. T.	HQ-EE	Walker, R. J.	NAGW 162	1830
13	UNIV CALIF-L ANGELES	Lynch, J. T.	HQ-EE	Stenzel, R. L.	NAGW 180	1831
13	UNIV CALIF-L ANGELES	Bohlin, J. D.	HQ-EZ	Ulrich, R.	NAGW 472	1833
13	UNIV CALIF-L ANGELES	Owens, F. C.	HQ-LE	Wong, A. Y.	NGT 05-006-800	1865
13	UNIV CALIF-SAN DIEGO	Bullock, G. D.	GSFC	Hudson, H. S.	NAG 5-502	1894
13	UNIV CALIF-SAN DIEGO	Early, L. J.	GSFC	Torbert, R. B.	NAG 5-610	1899
13	UNIV CALIF-SAN DIEGO	O'brien, J. J.	GSFC	McIlwain, C. E.	NAS 5-26854	1927
13	UNIV CALIF-SAN DIEGO	Purvis, C. K.	LERC	Whipple, E. C.	NAG 3-542	1888
13	UNIV CALIF-SAN DIEGO	Lynch, J. T.	HQ-EE	Fillius, W.	NAGW 652	1918
13	UNIV CALIF-SAN DIEGO	Lynch, J. T.	HQ-EE	McIlwain, C. E.	NGL 05-005-007	1946
13	UNIV CALIF-SAN DIEGO	Thomas, R. J.	HQ-EZ	Hudson, H. S.	NAGW 584	1915
13	UNIV CALIF-SAN DIEGO	Spicer, D. S.	HQ-EZ	Hudson, H. S.	NAGW 585	1916
13	UNIV CALIF-SAN DIEGO	Spicer, D. S.	HQ-EZ	Hudson, H. S.	NSG 7161	1955
13	UNIV CALIF-SAN DIEGO	Spicer, D. S.	HQ-EZ	Canfield, R. C.	NSG 7406	1957
13	UNIV CALIF-S BARBARA	Oran, W. A.	HQ-EN	Heeger, A. J.	NAGW 391	1993
13	UNIV CALIF-S CRUZ	Owens, F. C.	HQ-LB	Bodenheimer, P.	NGT 05-061-800	2025
13	UNIV OF CENTRAL FLA	Flood, D. J.	LERC	Meyers, J.	NAG 3-588	2346
13	UNIV OF CHICAGO	Wales, R. O.	GSFC	Wiedenbeck, M. E.	NAG 5-308	2540
13	UNIV OF CHICAGO	Davis, M. A.	GSFC	Simpson, J. A.	NAS 5-24430	2565
13	UNIV OF CHICAGO	Browne, I. D.	JSC	Smith, J. V.	NAG 9-47	2548
13	UNIV OF CHICAGO	Owens, F. C.	HQ-LE	Simpson, J. A.	NGT 14-020-801	2585
13	UNIV OF CHICAGO	Owens, F. C.	HQ-LE	Wiedenbeck, M.	NGT 14-020-802	2586
13	UNIV OF CHICAGO	Owens, F. C.	HQ-LE	Meyer, P.	NGT 14-020-804	2587
13	UNIV COLORADO-BOLDR	Shimazaki, T.	ARC	Mizushima, M.	NCA 2-170501	2187
13	UNIV COLORADO-BOLDR	Early, L. J.	GSFC	Rottman, G. T.	NSG 5178	2194
13	UNIV COLORADO-BOLDR	Jalufka, N. W.	LARC	Leone, S. R.	NAG 1-437	2113
13	UNIV COLORADO-BOLDR	Chai, A. T.	LERC	Sani, R. L.	NAG 3-342	2116
13	UNIV COLORADO-BOLDR	Chai, A. T.	LERC	Sani, R. L.	NAG 3-493	2117
13	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Hord, C. W.	NAGW 155	2141
13	UNIV COLORADO-BOLDR	Spicer, D. S.	HQ-EZ	Ayres, T. R.	NAGW 740	2154
13	UNIV COLORADO-BOLDR	Spicer, D. S.	HQ-EZ	Linsky, J. L.	NGL 06-003-057	2190
13	UNIV COLORADO-BOLDR	Bohlin, J. D.	HQ-EZ	Dulk, G. A.	NSG 7287	2198
13	UNIV COLORADO-BOLDR	Spicer, D. S.	HQ-EZ	Toomre, J.	NSG 7511	2200
13	UNIV COLORADO-BOLDR	Owens, F. C.	HQ-LE	Shull, J. M.	NGT 06-003-800	2191
13	UNIV OF DENVER	Fogle, V.	MSFC	Plooster, M. N.	NAS 8-34604	2208
13	UNIV OF DENVER	Lynch, J. T.	HQ-EE	Patel, V. L.	NAGW 158	2203
13	UNIV OF FLORIDA	Deyoung, R. J.	LARC	Schneider, R. T.	NAG 1-135	2354
13	UNIV OF FLORIDA	Fripp, A. L.	LARC	Anderson, T. J.	NAG 1-609	2357
13	UNIV OF HAWAII-MANOA	Brinton, H. C.	HQ-EL	Cruikshank, D.	NAGW 153	2472
13	UNIV OF HAWAII-MANOA	Gergely, T.	HQ-EZ	Labonte, B.	NAGW 622	2482
13	UNIV OF HAWAII-MANOA	Spicer, D. S.	HQ-EZ	Becklin, E. E.	NAGW 723	2486
13	UNIV OF HAWAII-MANOA	Boggess, N. W.	HQ-EZ	Hall, D. N.	NAGW 755	2488
13	UNIV OF HAWAII-MANOA	Thomas, R. J.	HQ-EZ	Labonte, B. J.	NSG 7536	2506
13	UNIV OF HAWAII-MANOA	Owens, F. C.	HQ-LE	Fenale, F. P.	NGT 12-004-800	2500
13	UNIV HOUSTON-HOUSTON	Early, L. J.	GSFC	Benbrook, J. R.	NAG 5-624	4688
13	UNIV HOUSTON-HOUSTON	Early, L. J.	GSFC	Sheldon, W. R.	NAG 6-18	4689
13	UNIV HOUSTON-CL LAKE	Browne, I. D.	JSC	Blanford, G. E.	NSG 9043	4723
13	UNIV ILLINOIS-URBANA	Clark, I. O.	LARC	Chuang, S. L.	NAG 1-500	2601
13	UNIV ILLINOIS-URBANA	Mirtich, M. J.	LERC	Thornton, J.	NAG 3-591	2617
13	UNIV ILLINOIS-URBANA	Hilsenrath, E.	HQ-EE	Liu, C. H.	NASW 3805	2629

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13	UNIV OF IOWA	O'brien, J.	GSFC	Gurnett, D. A.	NAS 5-26843	2772
13	UNIV OF IOWA	O'brien, J. J.	GSFC	Gurnett, D. A.	NAS 5-26857	2773
13	UNIV OF IOWA	O'brien, J. J.	GSFC	Frank, L. A.	NAS 5-27358	2775
13	UNIV OF IOWA	Sovey, J. S.	LERC	Carpenter, R. T.	NAG 3-206	2752
13	UNIV OF IOWA	Guynes, B. V.	MSFC	Shawhan, S.	NAS 8-33770	2779
13	UNIV OF IOWA	Rosendhal, J. D.	HQ-E	Gurnett, D. A.	NAGW 386	2762
13	UNIV OF IOWA	Lynch, J. T.	HQ-EE	Calvert, W.	NAGW 256	2760
13	UNIV OF IOWA	Lynch, J. T.	HQ-EE	Grabbe, C. L.	NAGW 364	2761
13	UNIV OF IOWA	Lynch, J. T.	HQ-EE	Grabbe, C. L.	NAGW 672	2764
13	UNIV OF IOWA	Lynch, J. T.	HQ-EE	Van Allen, J. A.	NGL 16-001-002	2781
13	UNIV OF IOWA	Lynch, J. T.	HQ-EE	Gurnett, D. A.	NGL 16-001-043	2782
13	UNIV OF KANSAS	Grier, N. T.	LERC	Armstrong, T. P.	NSG 3290	2824
13	UNIV OF KANSAS	Lynch, J. T.	HQ-EE	Armstrong, T. P.	NAGW 289	2805
13	UNIV MARYLAND-BALT	Gentry, B.	GSFC	Strow, L. L.	NAG 5-509	2928
13	UNIV MARYLAND-COL PK	Kittel, P.	ARC	Richard, J. P.	NAG 2-270	2936
13	UNIV MARYLAND-COL PK	Jones, F. C.	GSFC	Chang, C. C.	NAG 5-135	2941
13	UNIV MARYLAND-COL PK	Early, L. J.	GSFC	Moore, J.	NAG 5-169	2942
13	UNIV MARYLAND-COL PK	Ogilvie, K. W.	GSFC	Coplan, M. A.	NAG 5-244	2948
13	UNIV MARYLAND-COL PK	Hoffman, R. A.	GSFC	Coplan, M. A.	NAG 5-422	2962
13	UNIV MARYLAND-COL PK	Ogilvie, K. W.	GSFC	Coplan, M. A.	NAG 5-579	2969
13	UNIV MARYLAND-COL PK	Acuna, M. H.	GSFC	Gloeckler, G.	NAG 5-716	2972
13	UNIV MARYLAND-COL PK	Ramaty, R.	GSFC	Eicbler, D. S.	NAS 5-26582	2991
13	UNIV MARYLAND-COL PK	O'brien, J. J.	GSFC	Gloeckler, G.	NAS 5-26856	2993
13	UNIV MARYLAND-COL PK	O'brien, J. J.	GSFC	Papadopoulos, K.	NAS 5-26870	2994
13	UNIV MARYLAND-COL PK	Hoffman, R. A.	GSFC	Coplan, M. A.	NGR 21-002-291	3023
13	UNIV MARYLAND-COL PK	Heaps, W. S.	GSFC	McIlrath, T. J.	NSG 5313	3040
13	UNIV MARYLAND-COL PK	Chai, A. T.	LERC	Gammon, R. W.	NAG 3-638	2939
13	UNIV MARYLAND-COL PK	Baugher, C. R.	MSFC	Paik, H. J.	NAS 8-36165	3006
13	UNIV MARYLAND-COL PK	Spicer, D. S.	HQ-EZ	Gloeckler, G.	NAGW 101	2979
13	UNIV MARYLAND-COL PK	Chipman, E.	HQ-EZ	Kundu, M.	NAGW 415	2980
13	UNIV MARYLAND-COL PK	Chipman, E.	HQ-EZ	Kundu, M. R.	NAGW 483	2981
13	UNIV MARYLAND-COL PK	Spicer, D. S.	HQ-EZ	Kundu, M. R.	NGR 21-002-199	3021
13	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LE	Gloeckler, G.	NGT 21-002-820	3034
13	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LE	Boldt, E.	NGT 21-002-821	3035
13	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Adler, I.	NGT 21-002-814	3029
13	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Park, R. L.	NGT 21-002-816	3030
13	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Yodh, G.	NGT 21-002-818	3032
13	UNIV OF MASS-AMHERST	Black, D. C.	ARC	Strom, S. E.	NAG 2-344	3284
13	UNIV MICH-ANN ARBOR	Early, L. J.	GSFC	Meriwether, J. W.	NAG 5-615	3382
13	UNIV MICH-ANN ARBOR	Early, L. J.	GSFC	Sharp, W. E.	NGR 23-005-360	3421
13	UNIV MICH-ANN ARBOR	Vernon, R. W.	LERC	Merte, H., Jr.	NAG 3-403	3365
13	UNIV MICH-ANN ARBOR	Fields, S. A.	MSFC	Nagy, A. F.	NAS 8-34533	3411
13	UNIV MICH-ANN ARBOR	Behannon, K. W.	HQ-EE	Hays, P. B.	NAGW 496	3390
13	UNIV MICH-ANN ARBOR	Lynch, J. T.	HQ-EE	Nagy, A. F.	NGR 23-005-015	3419
13	UNIV MICH-ANN ARBOR	Lynch, J. T.	HQ-EE	Samir, U.	NGR 23-005-320	3420
13	U MINN-MNPLS-ST PAUL	Brooks, W. F.	ARC	Scriven, L. E.	NAG 2-63	3437
13	U MINN-MNPLS-ST PAUL	Early, L. J.	GSFC	Cahill, L. J.	NAG 6-11	3448
13	U MINN-MNPLS-ST PAUL	Early, L. J.	GSFC	Winckler, J. R.	NSG 5088	3469
13	U MINN-MNPLS-ST PAUL	Early, L. J.	GSFC	Kellogg, P. J.	NSG 5373	3470
13	U MINN-MNPLS-ST PAUL	Rice, E. J.	LERC	Lambert, R. F.	NAG 3-161	3439
13	U MINN-MNPLS-ST PAUL	Choo, Y. K.	LERC	Patankar, S. V.	NAG 3-596	3442
13	U MINN-MNPLS-ST PAUL	Dudenhofer, J.	LERC	Simon, T. W.	NAG 3-598	3443
13	U MINN-MNPLS-ST PAUL	Owens, F. C.	HQ-LE	Pepin, R. O.	NGT 24-001-801	3465
13	UNIV MO-ROLLA	Fogle, V.	MSFC	Hagen, D. E.	NAS 8-34603	3509
13	UNIV MO-ROLLA	Fallon, R. A.	MSFC	Day, D. E.	NAS 8-34758	3510
13	UNIV NEBRASKA-LINCLN	Alterovitz, S. A.	LERC	Woolam, J. A.	NAG 3-154	3558
13	UNIV NEVADA-L VEGAS	Decker, A. J.	LERC	Cloud, S. D.	NAG 3-368	3569
13	UNIV NEW HAMP-DURHAM	Ogilvie, K. W.	GSFC	Hollweg, J. V.	NAG 5-130	3581
13	UNIV NEW HAMP-DURHAM	Trainor, J. H.	GSFC	Webber, W. R.	NAS 5-24354	3593
13	UNIV NEW HAMP-DURHAM	Underwood, C. H.	GSFC	Chupp, E. L.	NAS 5-28609	3596

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13	UNIV NEW HAMP-DURHAM	Butler, D. M.	HQ-EE	Fisk, L. A.	NAGW 76	3585
13	UNIV NEW HAMP-DURHAM	Spicer, D. S.	HQ-EZ	Chupp, E. L.	NAGW 534	3590
13	UNIV NEW HAMP-DURHAM	Spicer, D. S.	HQ-EZ	Hollweg, J. L.	NSG 7411	3605
13	UNIV NEW HAMP-DURHAM	Owens, F. C.	HQ-LE	Hollweg, J. V.	NGT 29-004-800	3604
13	UNIV OF PITTSBURGH	Early, L. J.	GSFC	Zipf, E. C.	NAG 5-609	4449
13	UNIV OF PITTSBURGH	Kostiuk, T.	GSFC	Falk, J.	NAS 5-25013	4452
13	UNIV OF PITTSBURGH	Powell, J. A.	LERC	Choyke, W. J.	NAG 3-603	4444
13	UNIV OF RHODE ISLAND	Zuckerwar, A. J.	LARC	Cuomo, F. W.	NAG 1-519	4489
13	UNIV OF ROCHESTER	Bullock, G. D.	GSFC	Thomas, J. H.	NAG 5-505	3952
13	UNIV OF ROCHESTER	Spicer, D. S.	HQ-EZ	Thomas, J. H.	NSG 7562	3954
13	UNIV SAN FRANCISCO	Peck, E. E.	JSC	Benton, E. V.	NAS 9-15337	2038
13	UNIV SAN FRANCISCO	Parnell, T. A.	MSFC	Benton, E. V.	NAS 8-34340	2036
13	UNIV OF SOUTHERN CAL	Early, L. J.	GSFC	Judge, D. L.	NSG 5108	2079
13	UNIV OF SOUTHERN CAL	Spicer, D. S.	HQ-EZ	Rhodes, E. J.	NAGW 13	2070
13	UNIV TENNESSEE-KNOXV	Anderson, R. C.	LERC	Lewis, J. W.	NAG 3-385	4530
13	UNIV TENNESSEE-KNOXV	Jones, L. W.	MSFC	Keefer, D. R.	NAS 8-34320	4539
13	UNIV TEXAS-AUSTIN	Chapman, G. T.	ARC	Swinney, H. L.	NCA 2-781401	4766
13	UNIV TEXAS-AUSTIN	Early, L. J.	GSFC	Opal, C. B.	NAG 5-628	4744
13	UNIV TEXAS-AUSTIN	Preisser, J. S.	LARC	Blackstock, D. T.	NAS 1-17802	4748
13	UNIV TEXAS-AUSTIN	Chai, A. T.	LERC	Koschmieder, E. L.	NAG 3-393	4738
13	UNIV TEXAS-AUSTIN	Rice, E. J.	LERC	Blackstock, D. T.	NSG 3198	4774
13	UNIV TEXAS-DALLAS	Adkins, R. E.	GSFC	Hanson, W. B.	NAS 5-25310	4792
13	UNIV TEXAS-DALLAS	Duckett, R. J.	LARC	Hoffman, J. H.	NAG 1-320	4779
13	UNIV TEXAS-DALLAS	Wood, G. M.	LARC	Hoffman, J. H.	NAG 1-599	4780
13	UNIV TEXAS-DALLAS	Chappell, C. R.	MSFC	Hanson, W. B.	NAS 8-32831	4795
13	UNIV TEXAS-DALLAS	Wiskerchen, M. J.	HQ-EE	Hekkila, W. J.	NAGW 634	4790
13	UNIV TEXAS-DALLAS	Owens, F. C.	HQ-LB	Hanson, W.	NGT 44-013-800	4802
13	U TEX HLTH SC CTR-DA	Owens, F. C.	HQ-LE	Templeton, G. H.	NGT 44-080-800	4814
13	UNIV OF UTAH	Willshire, W. L., Jr.	LARC	Van Moorhem, W. K.	NAG 1-283	4827
13	UNIV OF VIRGINIA	Wakelyn, N. T.	LARC	Barker, R. E., Jr.	NAG 1-419	4990
13	UNIV OF VIRGINIA	Stencel, R. E.	HQ-EZ	Chevalier, R. A.	NAGW 764	5009
13	UNIV OF WASHINGTON	Early, L. J.	GSFC	Holzworth, R. H.	NAG 5-604	5120
13	UNIV OF WASHINGTON	O'Brien, J. J.	GSFC	Parks, G. K.	NAS 5-26850	5146
13	UNIV OF WASHINGTON	Deyoung, R. J.	LARC	Christiansen, W. H.	NAG 1-176	5101
13	UNIV OF WASHINGTON	Lynch, J. T.	HQ-EE	Holzworth, R. H.	NAGW 724	5139
13	UNIV WISC-MADISON	Glasser, C. A.	GSFC	McCammon, D.	NAG 5-594	5201
13	UNIV WISC-MADISON	Early, L. J.	GSFC	McCammon, D.	NAG 5-629	5202
13	UNIV WISC-MADISON	Lynch, J. T.	HQ-EE	Scherb, F.	NGR 50-002-162	5237
13	UTAH STATE UNIV	Early, L. J.	GSFC	Baker, K. D.	NAG 5-603	4843
13	UTAH STATE UNIV	Early, L. J.	GSFC	Raitt, W. J.	NAG 5-607	4844
13	UTAH STATE UNIV	Owens, F. C.	HQ-LE	Torr, D. G.	NGT 45-003-803	4857
13	VANDERBILT UNIVERSTY	Jalufka, N. W.	LARC	Barach, J. P.	NCC 1-8	4559
13	VIRGINIA STATE UNIV	Singh, J. J.	LARC	McCoy, R. M.	NSG 1342	5099
13	WEBB INST NAVAL ARCH	Elrod, W. L.	MSFC	Hadler, J. B.	NAS 8-35807	3955
13	WASHINGTON ST UNIV	Nelson, H.	ARC	Dickinson, J. T.	NCA 2-840202	5163
13	WASHINGTON ST UNIV	Poppa, H.	ARC	Dickinson, J. T.	NCA 2-840401	5164
13	WASHINGTON ST UNIV	Owens, F. C.	HQ-LE	Dickinson, J. T.	NGT 48-001-800	5165
13	WASHINGTON UNIVERSTY	Dietrich, J. W.	JSC	Walker, R. M.	NGL 26-008-065	3540
13	WASHINGTON UNIVERSTY	Heyman, J. S.	LARC	Miller, J. G.	NSG 1601	3544
13	WASHINGTON UNIVERSTY	Owens, F. C.	HQ-LB	Miller, J. G.	NGT 26-010-800	3542
19	ALABAMA A&M UNIV	Moore, W. W., Jr.	MSFC	Lal, R. B.	NAS 8-32945	1010
19	JOHNS HOPKINS UNIV	O'Brien, J. J.	GSFC	Feldman, P. D.	NAS 5-26848	2909
19	JOHNS HOPKINS UNIV	Lynch, J. T.	HQ-EE	Roelof, E. C.	NAGW 264	2900
19	ATLANTA UNIVERSITY	Mapp, M. W.	LERC	Reed, J. L.	NAG 3-113	2405
19	AUBURN UNIV-AUBURN	Little, S. A.	MSFC	Fromhold, A. T., Jr.	NAS 8-35914	1019
19	AUGSBURG COLLEGE	Bullock, G. D.	GSFC	Engelbretson, M. J.	NAG 5-349	3433
19	BOSTON COLLEGE	Stassinopoulos, E. G.	GSFC	Carovillano, R. L.	NAG 5-533	3045
19	BRIGHAM YOUNG UNIV	Fimmel, R. O.	ARC	Jones, D. E.	NAG 2-145	4826
19	CALIF INST OF TECH	Phinney, W. C.	JSC	Wyllie, P. J.	NAG 9-103	1332
19	CALIF INST OF TECH	Browne, I. D.	JSC	Stolper, E.	NAG 9-105	1333



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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
19	CALIF INST OF TECH	Vescelus, F.	HQ-EL	Muhleman, D. O.	NASW 3983	1360
19	CALIF INST OF TECH	Bohlin, J. D.	HQ-EZ	Martin, S. F.	NAGW 255	1342
19	CASE WESTERN RESERVE	Carney, M.	LERC	Ostrach, S.	NAG 3-411	4064
19	CASE WESTERN RESERVE	Forman, R.	LERC	Hoffman, R. W.	NAG 3-474	4073
19	CASE WESTERN RESERVE	Stearns, C. A.	LERC	Mitchell, T. E.	NCC 3-43	4105
19	CASE WESTERN RESERVE	Stearns, C. A.	LERC	Dybbs, A.	NCC 3-45	4106
19	CHRISTPHR NEWPRT COL	Wilson, J. W.	LARC	Chang, C. K.	NSG 1614	4868
19	CLARKSON UNIVERSITY	Moore, W. W., Jr.	MSFC	Wilcox, W. R.	NAS 8-34891	3709
19	COLLEGE OF WM & MARY	Cantrell, J. H.	LARC	Winter, R.	NCC 1-72	4888
19	COLLEGE OF WM & MARY	Phillips, D. H.	LARC	Krakauer, H.	NCC 1-77	4890
19	COLUMBIA UNIVERSITY	Travis, L.	GSFC	Levenson, R.	NAS 5-29172	3739
19	COLUMBIA UNIVERSITY	Green, S.	GSFC	Osgood, R. M.	NCC 5-28	3749
19	COLUMBIA UNIVERSITY	Jones, C. T., III	MSFC	Pan, C. H.	NAS 8-34713	3741
19	CORNELL UNIVERSITY	Early, L. J.	GSFC	Kelley, M. C.	NSG 6020	3812
19	CORNELL UNIVERSITY	Hardage, J.	MSFC	Kelley, M. C.	NAS 8-36687	3796
19	CORNELL UNIVERSITY	Fowlis, W. W.	MSFC	Kopicky, K. J.	NAS 8-33728	2728
19	DRAKE UNIVERSITY	Clark, I. O.	LARC	Bose, S. M.	NAG 1-335	4340
19	DREXEL UNIVERSITY	Bullock, G. D.	GSFC	Basu, S.	NAG 5-456	3068
19	EMMANUEL COL-MASS	Crouch, R. K.	LARC	Dressler, R. F.	NAG 1-325	2266
19	GEORGE WASHINGTON U	Bullock, G. D.	GSFC	Dalgarno, A.	NAG 5-448	3073
19	HARVARD UNIVERSITY	Illg, W.	LARC	Daniel, I. M.	NAG 1-366	2511
19	ILL INST OF TECH	Smith, B. F.	ARC	Iverson, J. D.	NAG 2-151	2731
19	IOWA STATE UNIV	Pollack, J. B.	ARC	Richardson, S. M.	NCC 2-174	2747
19	IOWA STATE UNIV	Snyder, R. S.	MSFC	Micale, F. J.	NAS 8-35989	4359
19	LEHIGH UNIVERSITY	Gillespie, C. M., Jr.	ARC	Elliot, J. L.	NAG 2-257	3132
19	MASS INST OF TECH	Tuyahov, A. J.	HQ-EL	Gatos, H. C.	NSG 7331	3271
19	MASS INST OF TECH	Nakanishi, S.	LERC	Asmussen, J.	NAG 3-305	3322
19	MICHIGAN STATE UNIV	Owens, F. C.	HQ-LE	Bandurski, R.	NGT 23-002-800	3337
19	MICHIGAN STATE UNIV	Reeves, F. A.	MSFC	Hellawell, A.	NAS 8-33727	3348
19	MICHIGAN TECH UNIV	Hoell, J. M.	LARC	Yu, C.	NAG 1-407	3971
19	NO CAR A&T STATE U	Crouch, R. K.	ARC	Bachmann, K. J.	NAG 1-354	3985
19	NO CAROLINA STATE U	Ledley, B.	GSFC	Manring, E. R.	NAS 5-27669	3999
19	NO CAROLINA STATE U	Yates, I. C., Jr.	MSFC	Davis, S. H.	NAS 8-33881	2529
19	NORTHWESTERN UNIV	Christodoulidis, D. C.	GSFC	Rapp, R. H.	NAG 5-519	4175
19	OHIO STATE UNIV	Illg, W.	LARC	Goglia, G. L.	NAG 1-219	4922
19	OLD DOMINION UNIV	Sawyer, W. C.	LARC	Baysal, O.	NAG 1-559	4946
19	OLD DOMINION UNIV	Wintucky, E. G.	LERC	Swanson, L. W.	NAG 3-434	4301
19	OREGON GRADUATE CTR	Early, L. J.	GSFC	Mitchell, J. D.	NAG 6-7	4388
19	PENN STATE U-UNIV PK	Early, L. J.	GSFC	Hale, L. C.	NSG 6004	4427
19	PENN STATE U-UNIV PK	Nakanishi, S.	LERC	Micci, M. M.	NAG 3-575	4375
19	PENN STATE U-UNIV PK	Alexander, M. B.	MSFC	Bohren, C. F.	NAS 8-36194	4403
19	PENN STATE U-UNIV PK	Bullock, G. D.	GSFC	Gross, S. H.	NAG 5-479	3841
19	POLY INST OF NY	Singer, J.	LERC	Banks, E.	NAG 3-616	3840
19	POLY INST OF NY	Sawyer, W. C.	LARC	Smits, J.	NAG 1-545	3610
19	PRINCETON UNIVERSITY	Owens, F. C.	HQ-LB	Mahlman, J.	NGT 31-001-803	3644
19	PRINCETON UNIVERSITY	Tilg, W.	LARC	Sun, C. T.	NAG 1-222	2657
19	PURDUE UNIVERSITY	Arrison, A.	LERC	Schwartz, R. J.	NAG 3-433	2677
19	PURDUE UNIVERSITY	Benson, R. F.	HQ-EE	Bernstein, W.	NAGW 69	4589
19	RICE UNIVERSITY	McKenzie, R. L.	ARC	Hesselink, L.	NAG 2-83	1493
19	STANFORD UNIVERSITY	Lee, G.	ARC	Hesselink, L.	NCA 2-745306	1577
19	STANFORD UNIVERSITY	Bullock, G. D.	GSFC	Helliwell, R. A.	NAG 5-476	1518
19	STANFORD UNIVERSITY	Hoover, R.	MSFC	Walker, A. B.	NAS 8-36481	1553
19	STANFORD UNIVERSITY	Lynch, J. T.	HQ-EE	Crawford, F. W.	NGL 05-020-176	1641
19	STANFORD UNIVERSITY	O'Neill, P. E.	GSFC	Blanchard, A. J.	NAG 5-428	4634
19	TEXAS A&M UNIVERSITY	Kerslake, W. R.	LERC	Ray, P. K.	NAG 3-76	1033
19	TUSKEGEE INSTITUTE	Bullock, G. D.	GSFC	Comfort, R. H.	NAG 5-475	1057
19	UNIV ALA-HUNTSVILLE	Ethridge, E. C.	MSFC	Workman, G. L.	NAS 8-35665	1086
19	UNIV ALA-HUNTSVILLE	Frazier, D. O.	MSFC	Baird, J. K.	NAS 8-35986	1090
19	UNIV ALA-HUNTSVILLE	Whitaker, A. F.	MSFC	Gregory, J. C.	NAS 8-36189	1092
19	UNIV ALASKA-FAIRBNKS	Bullock, G. D.	GSFC	Watkins, B. J.	NAG 5-452	1109

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19	UNIV ALASKA-FAIRBNKS	Bullock, G. D.	GSFC	Kan, J. R.	NAG 5-469	1110
19	UNIV ALASKA-FAIRBNKS	Bullock, G. D.	GSFC	Akasofu, S.	NAG 5-470	1111
19	UNIV ALASKA-FAIRBNKS	Bullock, G. D.	GSFC	Rees, M. H.	NAG 5-471	1112
19	UNIV ALASKA-FAIRBNKS	Early, L. J.	GSFC	Wescott, E. M.	NAG 6-1	1115
19	UNIV ALASKA-FAIRBNKS	Oseroff, H.	GSFC	McRoy, C.	NAS 5-28769	1121
19	UNIV ALASKA-FAIRBNKS	Lynch, J. T.	HQ-EE	Swift, D. W.	NAGW 269	1116
19	UNIV ALASKA-FAIRBNKS	Lynch, J. T.	HQ-EE	Akasofu, S. I.	NSG 7447	1125
19	UNIV OF ARIZONA	Fimmel, R. O.	ARC	Hunten, D. M.	NAG 2-143	1181
19	UNIV OF ARIZONA	Rosendhal, J. D.	HQ-E	Drake, M. J.	NAGW 680	1246
19	UNIV CALIF-BERKELEY	Clark, T. A.	GSFC	Welch, W. J.	NAG 5-95	1673
19	UNIV CALIF-BERKELEY	Bullock, G. D.	GSFC	Hudson, M. K.	NAG 5-451	1678
19	UNIV CALIF-BERKELEY	Early, L. J.	GSFC	Carlson, C. W.	NAG 6-10	1682
19	UNIV CALIF-BERKELEY	Behannon, K. W.	HQ-EE	Anderson, K. A.	NGL 05-003-017	1735
19	UNIV CALIF-L ANGELES	Des Marais, D. J.	ARC	Schopf, J. W.	NCA 2-33	1850
19	UNIV CALIF-L ANGELES	Bullock, G. D.	GSFC	Elphic, R. C.	NAG 5-474	1812
19	UNIV CALIF-L ANGELES	Bullock, G. D.	GSFC	Maggs, J. E.	NAG 5-488	1813
19	UNIV CALIF-L ANGELES	O'brien, J. J.	GSFC	Russell, C. T.	NAS 5-26846	1843
19	UNIV CALIF-L ANGELES	Browne, I. D.	JSC	Wasson, J. T.	NAG 9-87	1824
19	UNIV CALIF-L ANGELES	Lynch, J. T.	HQ-EE	Kennel, C. F.	NGL 05-007-190	1861
19	UNIV CALIF-SAN DIEGO	Fimmel, R. O.	ARC	Fillius, W.	NAG 2-153	1885
19	UNIV CALIF-SAN DIEGO	Christodulidis, D. C.	GSFC	Zumberge, M.	NAG 5-562	1897
19	UNIV CALIF-SAN DIEGO	Scudder, J. D.	GSFC	Fillins, R. W.	NAS 5-27315	1931
19	UNIV CALIF-SAN DIEGO	Lynch, J. T.	HQ-EE	Alfven, H.	NSG 7623	1959
19	UNIV OF CHICAGO	Moseley, S. H.	GSFC	Harper, D. A.	NAG 5-318	2541
19	UNIV OF CHICAGO	Quaide, W. L.	HQ-EL	Simpson, J. A.	NASW 3959	2572
19	UNIV OF CINCINNATI	Connolly, D. J.	LERC	Kapoor, V. J.	NCC 3-33	4234
19	UNIV OF CINCINNATI	Mirtich, M. J.	LERC	Kapoor, V. J.	NCC 3-36	4235
19	UNIV COLORADO-BOLDR	Fimmel, R. O.	ARC	Stewart, I. A.	NAS 2-9477	2161
19	UNIV COLORADO-BOLDR	Early, L. J.	GSFC	Barth, C. A.	NSG 5103	2192
19	UNIV COLORADO-BOLDR	Jalufka, N. W.	LARC	Leone, S. R.	NAG 1-600	2114
19	UNIV COLORADO-BOLDR	Lyons, L. R.	MSFC	Dusenbery, P. B.	NAS 8-35913	2177
19	UNIV OF GEORGIA	Blodget, H. W.	GSFC	Welch, R. A.	NAG 5-288	2456
19	UNIV ILLINOIS-URBANA	Early, L. J.	GSFC	Walker, A. B.	NGR 14-005-181	2634
19	UNIV OF IOWA	Bullock, G. D.	GSFC	Gurnett, D. A.	NAG 5-310	2755
19	UNIV OF IOWA	Bullock, G. D.	GSFC	Fix, J. D.	NAG 5-449	2756
19	UNIV OF IOWA	Bullock, G. D.	GSFC	Frank, L. A.	NAG 5-483	2757
19	UNIV OF IOWA	Purvis, C. K.	LERC	Kurth, W. S.	NAG 3-449	2753
19	UNIV OF IOWA	Wiskerchen, M. J.	HQ-EE	Goertz, C. K.	NSG 7632	2784
19	UNIV OF KANSAS	Lynch, J. T.	HQ-EE	Beard, D. B.	NAGW 217	2804
19	UNIV OF KANSAS	Brinton, H. C.	HQ-EL	Beard, D. B.	NAGW 187	2803
19	UNIV MARYLAND-COL PK	Bullock, G. D.	GSFC	Wu, C. S.	NAG 5-454	2964
19	UNIV MARYLAND-COL PK	Ormes, J. F.	GSFC	Gloeckler, G.	NGR 21-002-316	3024
19	UNIV MARYLAND-COL PK	Sawyer, W. C.	LARC	Anderson, J. D., Jr.	NAG 1-546	2934
19	UNIV MARYLAND-COL PK	Wiskerchen, M. J.	HQ-EE	Wu, C. S.	NGL 21-002-005	3016
19	UNIV MICH-ANN ARBOR	Bullock, G. D.	GSFC	Hays, P. B.	NAG 5-465	3375
19	UNIV MICH-ANN ARBOR	Bullock, G. D.	GSFC	Nagy, A. F.	NAG 5-472	3376
19	UNIV MICH-ANN ARBOR	Bullock, G. D.	GSFC	Abreu, V. J.	NAG 5-473	3377
19	UNIV MICH-ANN ARBOR	Bullock, G. D.	GSFC	Carignan, G. R.	NAG 5-482	3379
19	U MINN-MNPLS-ST PAUL	Sugiura, M.	GSFC	Cahill, L. J.	NAG 5-529	3445
19	U MINN-MNPLS-ST PAUL	Bullock, G. D.	GSFC	Kellogg, P. J.	NAG 5-535	3446
19	UNIV NEW HAMP-DURHAM	Early, L. J.	GSFC	Arnoldy, R. L.	NAG 6-12	3583
19	UNIV NEW HAMP-DURHAM	Moore, T. E.	MSFC	Arnoldy, R. L.	NAS 8-36187	3597
19	UNIV OF NEW ORLEANS	Wood, G. M., Jr.	LARC	Ioup, G. E.	NAG 1-485	2870
19	UNIV OF PENNSYLVANIA	Owens, F. C.	HQ-LE	Shen, B.	NGT 39-090-800	4440
19	UNIV OF PITTSBURGH	Deering, D. W.	GSFC	Hapke, B.	NAG 5-378	4447
19	UNIV OF PITTSBURGH	Early, L. J.	GSFC	Zipf, E. C.	NAG 6-2	4450
19	UNIV OF ROCHESTER	Arrison, A.	LERC	Hall, D. G.	NAG 3-414	3950
19	UNIV OF SANTA CLARA	Whitten, R. C.	ARC	McCormick, P. T.	NCC 2-130	2059
19	UNIV OF SOUTHERN CAL	Fimmel, R. O.	ARC	Judge, D. L.	NAG 2-146	2066
19	UNIV TENNESSEE-KNOXV	Chai, A. T.	LERC	Parang, M.	NAG 3-239	4527

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19	UNIV TEXAS-DALLAS	Bullock, G. D.	GSFC	Hanson, W.	NAG 5-293	4782
19	UNIV TEXAS-DALLAS	Bullock, G. D.	GSFC	Hanson, W.	NAG 5-305	4783
19	UNIV TEXAS-DALLAS	Bullock, G. D.	GSFC	Heelis, R. A.	NAG 5-306	4784
19	UNIV TEXAS-DALLAS	Bullock, G. D.	GSFC	Coley, W. R.	NAG 5-450	4786
19	UNIV TEXAS-DALLAS	Blanchard, R. C.	LARC	Hoffman, J. H.	NAS 1-17399	4791
19	UNIV OF TOLEDO	Berkopce, F. D.	LERC	Dewitt, K. J.	NAG 3-577	4264
19	UNIV OF VIRGINIA	Cyphers, H.	GSFC	O'connell, R. W.	NAS 5-28613	5016
19	UNIV OF WASHINGTON	Vescelus, F.	HQ-EL	Tillman, J. E.	NASW 3982	5149
19	UNIV WISC-MADISON	Lynch, J. T.	HQ-EE	Hershkowitz, N.	NAGW 275	5206
19	UTAH STATE UNIV	Bullock, G. D.	GSFC	Sojka, J. J.	NAG 5-455	4842
19	UTAH STATE UNIV	O'brien, J. J.	GSFC	Torr, M. R.	NAS 5-26849	4852
19	UTAH STATE UNIV	Lynch, J. T.	HQ-EE	Torr, M. R.	NAGW 105	4846
19	VA MILITARY INST	Browne, I. D.	JSC	Schreider, H. D.	NAG 9-102	5031
19	VIRGINIA STATE UNIV	Wilson, J. W.	LARC	Stith, J. J.	NAG 1-374	5097
19	VIRGINIA STATE UNIV	Wilson, J. W.	LARC	Stronach, C. E.	NAG 1-416	5098
19	WASHINGTON UNIVERSTY	McKay, D. S.	JSC	Haskin, L. A.	NAG 9-101	3527
19	WASHINGTON UNIVERSTY	Rosenthal, J. D.	HQ-E	Walker, R. M.	NAGW 122	3528
19	WASHINGTON UNIVERSTY	Evans, D.	HQ-EE	Arvidson, R. E.	NASW 4017	3539
19	YALE UNIVERSITY	Fallon, R. A.	MSFC	Nordine, P. C.	NAS 8-34383	2235
21	ATLANTA UNIVERSITY	Shoosmith, J. N.	LARC	Mickens, R. E.	NAG 1-410	2401
21	BROWN UNIVERSITY	Armstrong, E. S.	LARC	Banks, H. T.	NAG 1-258	4461
21	BROWN UNIVERSITY	Armstrong, E. S.	LARC	Banks, H. T.	NAG 1-517	4463
21	BROWN UNIVERSITY	Owens, F. C.	HQ-LE	Su, C. H.	NGT 40-002-801	4482
21	CARNEGIE-MELLON UNIV	Owens, F. C.	HQ-LB	Fix, G. J.	NGT 39-087-800	4335
21	COLLEGE OF WM & MARY	Senn, E. H.	LARC	Noonan, R. E.	NSG 1435	4897
21	COLORADO STATE UNIV	Lomax, H.	ARC	Thomas, J. W.	NCA 2-165201	2105
21	COLORADO STATE UNIV	Murphy, J.	ARC	Prenter, P. M.	NCA 2-165501	2106
21	COOPER UNION COLLEGE	Drummond, J. P.	LARC	Chinitz, W. C.	NAG 1-18	3755
21	DUKE UNIVERSITY	Ford, W. E.	LERC	Smith, D. A.	NSG 3160	3964
21	HAMPTON INSTITUTE	Lambiotte, J. J., Jr.	LARC	Samba, A. S.	NAG 1-544	4909
21	KENT STATE UNIV-KENT	Chamis, C. C.	LERC	Wang, P. S.	NAG 3-298	4154
21	LA ST U&A&M COL-BRGE	Brinton, H. C.	HQ-EL	Henry, R. J.	NAGW 48	2853
21	MASS INST OF TECH	Yates, I. C.	MSFC	Greenspan, H. P.	NAS 8-35412	3229
21	MISSISSIPPI STATE U	Smith, R. E., Jr.	LARC	Thompson, J. F.	NSG 1577	3487
21	NEW YORK UNIVERSITY	Warming, R. F.	ARC	Harten, A.	NCA 2-525301	3834
21	NEW YORK UNIVERSITY	Salas, M. D.	LARC	Garabedian, P. R.	NSG 1579	3837
21	OLD DOMINION UNIV	Dagenhart, J. R.	LARC	Lakin, W. D.	NAG 1-297	4924
21	OLD DOMINION UNIV	Owens, F. C.	HQ-LB	Smith, P. W.	NGT 47-003-802	4970
21	SOUTHERN METHODIST U	Browne, I. D.	JSC	Gunst, R. F.	NCC 9-9	4616
21	SO UNIV & A&M COL-BR	Chisler, J.	HQ-SU	Roquimore, L.	NAGW 701	2861
21	STANFORD UNIVERSITY	Tobak, M.	ARC	Keller, J. B.	NCA 2-745505	1601
21	UNIV ALA-HUNTSVILLE	Black, R. E.	MSFC	Kaukler, W. F.	NAG 8-511	1063
21	UNIV CALIF-L ANGELES	Warming, R.	ARC	Osher, S.	NCA 2-390403	1853
21	UNIV ILLINOIS-URBANA	Murray, N. D.	LARC	Campbell, R. H.	NSG 1471	2635
21	UNIV OF SANTA CLARA	Lomax, H.	ARC	Vinokur, M.	NCC 2-16	2055
21	UNIV TENNESSEE-KNOXV	Owens, F. C.	HQ-LB	Antar, B. N.	NGT 43-001-804	4547
21	UNIV OF UTAH	Watson, V.	ARC	Barnhill, R. E.	NCA 2-821401	4838
21	VANDERBILT UNIVERSTY	Vinz, F. L.	MSFC	Kawamura, K.	NAS 8-36285	4558
22	ALABAMA A&M UNIV	Randall, J. L.	MSFC	Saha, H.	NAG 8-24	1002
22	ARIZONA STATE UNIV	Stevens, K. G.	ARC	Tylavsky, D. J.	NCA 2-8	1162
22	ARIZONA STATE UNIV	Stead, S. E.	ARC	Nielson, G. M.	NCA 2-29	1163
22	ARIZONA STATE UNIV	Krosel, S. M.	LERC	O'grady, E. P.	NAG 3-112	1132
22	AUBURN UNIV-AUBURN	Atherton, J.	MSFC	Carroll, C. C.	NAS 8-35977	1020
22	BOWIE STATE COLLEGE	Goldberg, M. J.	GSFC	Bhatia, M. S.	NAG 5-494	2875
22	BOWIE STATE COLLEGE	Kraft, J. D.	GSFC	Bhatia, M. S.	NAG 5-715	2877
22	BOWIE STATE COLLEGE	Truszkowski, W. F.	GSFC	Srivastava, S.	NAS 5-28160	2878
22	BRIGHAM YOUNG UNIV	Lansing, D. L.	LARC	Stephenson, M. B.	NAG 1-391	4825
22	BROOKLYN COLLEGE	Jacobs, B.	GSFC	Harrow, K.	NAG 5-711	3689
22	CAL STATE U-FRESNO	Lim, R. S.	ARC	Heaney, A. A.	NCA 2-251301	1395
22	CARNEGIE-MELLON UNIV	Owens, F. C.	LARC	Moravec, H. P.	NGT 39-087-802	4337

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
22	CARNEGIE-MELLON UNIV	Milner, E. J.	LERC	Hudak, J. J.	NAS 3-24225	4333
22	CATHOLIC UNIVERSITY	Jacobs, B.	GSFC	Welch, J. N.	NAG 5-311	2253
22	CLEVELAND STATE UNIV	Schulte, R. R.	LERC	Megargle, R.	NAG 3-254	4123
22	COLLEGE OF WM & MARY	Shipman, F. S.	LARC	Feyock, S.	NAG 1-360	4872
22	COLLEGE OF WM & MARY	Morello, S. A.	LARC	Collins, R.	NAG 1-469	4874
22	COLLEGE OF WM & MARY	Harrison, F. W., Jr.	LARC	Sanwal, J. C.	NAG 1-533	4875
22	COLLEGE OF WM & MARY	Senn, E. H.	LARC	Collins, W. R.	NAG 1-534	4876
22	COLLEGE OF WM & MARY	Foudriat, E. C.	LARC	Feyock, S.	NSG 1626	4898
22	COLLEGE OF WM & MARY	Arpasi, D. J.	LERC	Feyock, S.	NAG 3-232	4881
22	COLORADO STATE UNIV	Graves, R.	HQ	Johnson, G. M.	NGT 06-002-802	2110
22	COLORADO STATE UNIV	Bailey, F. R.	ARC	Johnson, G. M.	NCC 2-344	2107
22	CORNELL UNIVERSITY	Bailey, F. R.	ARC	Wilson, K. G.	NAG 2-291	3762
22	DUKE UNIVERSITY	Stroud, W. J.	LARC	Patrick, M. L.	NAG 1-466	3957
22	FOOTHILL-DEANZA SYST	Lum, H.	ARC	Frederick, V.	NCC 2-342	1410
22	FISK UNIVERSITY	Key, C. F.	MSFC	Springer, J. M.	NAS 8-36166	4512
22	FURMAN UNIVERSITY	Monk, J. C.	MSFC	Abernethy, K.	NAG 8-31	4500
22	GEORGE MASON UNIV	Truskowski, W. F.	GSFC	Mitchell, C. M.	NAS 5-27587	4902
22	GEORGE WASHINGTON U	Truskowski, W. F.	GSFC	Sibert, J. L.	NAS 5-27585	2274
22	GEORGE WASHINGTON U	Migneault, G. E.	LARC	Miller, D. R.	NAG 1-179	2263
22	GEORGE WASHINGTON U	Lansing, D. L.	LARC	Foley, J. D.	NAG 1-185	2264
22	GEORGE WASHINGTON U	Lansing, D. L.	LARC	Foley, J. D.	NAG 1-538	2267
22	GEORGIA INST OF TECH	Truskowski, W. F.	GSFC	Mitchell, C. M.	NAS 5-28575	2440
22	GEORGIA INST OF TECH	Murray, N. D.	LARC	McKendry, M. S.	NAG 1-430	2413
22	HARVEY MUDD COLLEGE	Ardema, M. D.	ARC	Busenberg, S. N.	NAG 2-285	1412
22	HARVEY MUDD COLLEGE	Clary, G. R.	ARC	Borrelli, R. L.	NCA 2-283301	1414
22	HARVEY MUDD COLLEGE	Gupta, K. K.	ARC	Tanenbaum, B. S.	NCA 2-283303	1415
22	HARVEY MUDD COLLEGE	Gupta, K. K.	ARC	Tanenbaum, B. S.	NCA 2-283403	1418
22	HOWARD UNIVERSITY	Brunelle, J. E.	LARC	Coleman, D. M.	NAG 1-478	2294
22	HUMBOLDT STATE UNIV	Jones, W. P.	ARC	Blaisdell, J. H.	NCA 2-51	1423
22	HUMBOLDT STATE UNIV	Milov, L. A.	ARC	Blaisdell, J. H.	NCA 2-55	1424
22	HUNTER COLLEGE	Norman, S. D.	ARC	Strahler, A. H.	NCA 2-305401	3821
22	ILL INST OF TECH	Lim, R. S.	ARC	Costello, D. J., Jr.	NAG 2-202	2512
22	KENT STATE UNIV-KENT	Orlando, N. E.	LARC	Potter, J. L.	NAG 1-341	4153
22	LINCOLN UNIV-PA	Alterescu, S.	GSFC	Frankowsk, J. W.	NAS 5-28566	4366
22	LA ST U&A&M COL-BRGE	Jacobs, B.	GSFC	Iyengar, S. S.	NAG 5-540	2852
22	MASS INST OF TECH	Stevens, K. G.	ARC	Dennis, J. B.	NAG 2-247	3130
22	MASS INST OF TECH	Lum, H.	ARC	Sheridan, T.	NCC 2-360	3243
22	MASS INST OF TECH	Paddack, S. J.	GSFC	Akin, D. L.	NAG 5-445	3168
22	MASS INST OF TECH	Larsen, R. L.	HQ-RT	Thompkins, W. T.	NAGW 448	3194
22	MISSISSIPPI STATE U	Jobe, G. S.	MSFC	Ingels, F. M.	NAS 8-34906	3478
22	MONTANA STATE UNIV	Hofman, L. B.	ARC	Weyland, J.	NCA 2-69	3550
22	MONTANA STATE UNIV	Hofman, L. B.	ARC	Weyland, N. J.	NCA 2-470401	3551
22	NO CAROLINA STATE U	Schulbach, C. H.	ARC	Agrawal, D. P.	NAG 2-337	3992
22	NO CAROLINA STATE U	Eckhardt Jr., D. E.	LARC	McAllister, D. F.	NAG 1-440	3987
22	NO CAROLINA STATE U	Rogers, J. L.	LARC	Rasdort, W. J.	NAG 1-503	3988
22	NO CAROLINA STATE U	Eckhardt, D. E., Jr.	LARC	McAllister, D. F.	NAG 1-509	3989
22	NO CAROLINA STATE U	Rogers, J. L.	LARC	Rasdort, W. J.	NAG 1-604	3991
22	OLD DOMINION UNIV	Eckhardt, D. E., Jr.	LARC	Wild, C. D.	NAG 1-439	4938
22	OLD DOMINION UNIV	Wilhite, A. W.	LARC	Schwing, J. L.	NCC 1-74	4963
22	OLD DOMINION UNIV	Wilhite, A. W.	LARC	Schwing, J. L.	NCC 1-99	4967
22	SAN JOSE STATE UNIV	Deboo, G. J.	ARC	Strasilla, U.	NAG 2-215	1446
22	SO UNIV & A&M COL-BR	Wilson, J.	HQ-NI	Roquemore, L.	NGT 19-010-900	2865
22	SO UNIV & A&M COL-BR	Lewis, D.	HQ-NS	Roquemore, L.	NASW 3786	2863
22	STANFORD UNIVERSITY	Stevens, K. G., Jr.	ARC	Lundstrom, S. F.	NAG 2-248	1500
22	STANFORD UNIVERSITY	Leonard, A.	ARC	Ferziger, J. H.	NCA 2-745313	1582
22	STANFORD UNIVERSITY	Lum, H.	ARC	Flynn, M. J.	NCA 2-745406	1589
22	STANFORD UNIVERSITY	Lum, H.	ARC	Feigenbaum, E. A.	NCC 2-220	1619
22	STANFORD UNIVERSITY	Lum, H.	ARC	Buchanan, B.	NCC 2-274	1625
22	STANFORD UNIVERSITY	Paddack, S. J.	GSFC	Binford, T. O.	NAG 5-261	1517
22	STANFORD UNIVERSITY	Larsen, R. L.	HQ-RT	Banks, P. M.	NAGW 419	1529

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22	STATE UNIV NY-ALBANY	Owens, F. C.	HQ-LB	George, W.	NGT 33-183-803	3887
22	STATE UNIV NY-BUFFAL	Murray, N. D.	LARC	Wittie, L. D.	NAG 1-249	3897
22	STATE U NY-STONY BRK	Vaughn, R. D.	JSC	Wittie, L. D.	NAS 9-17187	3924
22	STEVENS INST OF TECH	Smith, P. H.	GSFC	Sack, I. H.	NAG 5-371	3658
22	TUSKEGEE INSTITUTE	Randall, J. L.	MSFC	Harris, V. G.	NAG 8-41	1039
22	UNIV ALA-BIRMINGHAM	Owens, F. C.	HQ-LE	McAnulty, M.	NGT 02-002-800	1053
22	UNIV ALA-HUNTSVILLE	Bryan, T. C.	MSFC	Tech, W.	NAS 8-35670	1088
22	UNIV ALA-HUNTSVILLE	Owens, F. C.	HQ-LB	Horwitz, J. L.	NGT 01-002-804	1098
22	UNIV CALIF-BERKELEY	Lawless, J. G.	ARC	Colwell, R. N.	NCC 2-205	1730
22	UNIV CALIF-BERKELEY	Lum, H.	ARC	Zadeh, L.	NCC 2-275	1732
22	UNIV CALIF-IRVINE	Migneault, G. E.	LARC	Leveson, N. G.	NAG 1-606	1774
22	UNIV CALIF-L ANGELES	Eckhardt, D. E., Jr.	LARC	Avizienis, A.	NAG 1-512	1795
22	UNIV CALIF-L ANGELES	Milner, E. J.	LERC	Ercegovic, M. D.	NAG 3-358	1806
22	UNIV CALIF-S BARBARA	Likens, W. C.	ARC	Estes, J. E.	NCA 2-680401	2000
22	UNIV CALIF-S BARBARA	Campbell, W. J.	GSFC	Peuquet, D. J.	NAG 5-369	1986
22	UNIV COLORADO-BOLDR	Prokop, E. J.	GSFC	Hansen, E. R.	NAS 5-29174	2174
22	UNIV COLORADO-BOLDR	Devirian, M.	HQ-EI	Hansen, E.	NASW 3711	2179
22	UNIV DIST COLUMBIA	Coleman, A. M.	HQ-U	Coleman, W. R.	NGT 05-050-902	2316
22	UNIV OF GEORGIA	Ault, L. A.	HQ-LG	Carmon, J. L.	NASW 3247	2460
22	UNIV ILLINOIS-URBANA	Iobst, K. W.	GSFC	Evenson, P.	NAG 5-377	2621
22	UNIV ILLINOIS-URBANA	Schaefer, D. H.	GSFC	Slotnick, D. L.	NAS 5-26405	2625
22	UNIV ILLINOIS-URBANA	Senn, E. H.	LARC	Campbell, R. H.	NAG 1-138	2599
22	UNIV ILLINOIS-URBANA	Lupton, A. O.	LARC	Iyer, R. K.	NAG 1-508	2602
22	UNIV ILLINOIS-URBANA	Eckhardt, D. E.	LARC	Campbell, R. H.	NAG 1-510	2603
22	UNIV ILLINOIS-URBANA	Palumbo, D. L.	LARC	Iyer, R. K.	NAG 1-602	2605
22	UNIV ILLINOIS-URBANA	Voigt, S. J.	LARC	Gear, C. W.	NAG 1-613	2606
22	UNIV OF LOUISVILLE	Laid, S. C.	GSFC	Shelton, R. D.	NAS 5-26504	2844
22	UNIV MARYLAND-COL PK	Smith, P. H.	GSFC	Tripathi, S. K.	NAG 5-235	2947
22	UNIV MARYLAND-COL PK	McGarry, F. E.	GSFC	Basili, V. R.	NAG 5-368	2955
22	UNIV MARYLAND-COL PK	Howell, D. R.	GSFC	Agrawala, A. K.	NAS 5-28186	2999
22	UNIV MARYLAND-COL PK	McGarry, F. E.	GSFC	Basili, V. R.	NSG 5123	3038
22	UNIV OF MASS-AMHERST	Owens, F. C.	HQ-LB	Hanson, A. R.	NGT 22-010-801	3296
22	UNIV MICH-ANN ARBOR	Perdue, J. N.	ARC	Calahan, D. A.	NAG 2-259	3358
22	UNIV MICH-ANN ARBOR	Ciffone, D. L.	ARC	Volz, R. A.	NAG 2-350	3361
22	UNIV MICH-ANN ARBOR	Arnold, J. O.	ARC	Calahan, D. A.	NCC 2-201	3418
22	UNIV MICH-ANN ARBOR	Butler, R. W.	LARC	Shin, K. G.	NAG 1-296	3351
22	UNIV MICH-ANN ARBOR	Butler, R. W.	LARC	Shin, K. G.	NAG 1-492	3353
22	UNIV OF PITTSBURGH	Bivins, R. G.	HQ-LG	McWilliams, P. A.	NASW 3403	4453
22	UNIV OF SANTA CLARA	Jones, H. W., Jr.	ARC	Alkhatib, H.	NCA 2-685301	2048
22	UNIV OF SANTA CLARA	Jones, H. W., Jr.	ARC	Alkhatib, H. S.	NCA 2-685304	2050
22	UNIV OF SANTA CLARA	Likens, W. C.	ARC	Danielson, R.	NCA 2-685402	2052
22	UNIV OF SANTA CLARA	Jones, H. W., Jr.	ARC	Alkhatib, H. S.	NCA 2-685502	2054
22	UNIV OF SO FLORIDA	Murray, N. D.	LARC	Kim, K. H.	NAG 1-470	2396
22	UNIV TEXAS-ARLINGTON	Stevens, K. G., Jr.	ARC	Kavi, K. M.	NAG 2-273	4724
22	UNIV TEXAS-ARLINGTON	Lum, H.	ARC	Starks, S. A.	NCA 2-780401	4727
22	UNIV TEXAS-DALLAS	King, J. H.	GSFC	Hanson, W. B.	NAS 5-28706	4794
22	UNIV OF TOLEDO	Jacobs, B.	GSFC	Kertz, G.	NAG 5-586	4269
22	UNIV OF TOLEDO	Stevens, G. H.	LERC	Kwatra, S. C.	NAG 3-157	4255
22	UNIV OF TOLEDO	Schock, H. J.	LERC	White, P. R.	NAG 3-533	4263
22	UNIV OF VIRGINIA	Hartenstein, R. G.	GSFC	Martin, W. N.	NAG 5-597	5003
22	UNIV OF VIRGINIA	Shoosmith, J. N.	LARC	Ortega, J. M.	NAG 1-242	4983
22	UNIV OF VIRGINIA	Senn, E. H.	LARC	Knight, J. C.	NAG 1-260	4984
22	UNIV OF VIRGINIA	Stroud, W. J.	LARC	Pratt, T. W.	NAG 1-467	4991
22	UNIV OF VIRGINIA	Eckhardt, D. E., Jr.	LARC	Knight, J. C.	NAG 1-511	4992
22	UNIV OF VIRGINIA	Migneault, G. E.	LARC	Knight, J. C.	NAG 1-605	4993
22	UNIV OF VIRGINIA	Delaat, J. C.	LERC	Weaver, A. C.	NAG 3-630	4998
22	UNIV WISC-MADISON	Goorjian, P. M.	HQ-RT	Parter, S. V.	NASW 3829	5231
29	ATLANTA UNIVERSITY	Goode, P. W.	LARC	Setzer, C. B.	NAG 1-412	2403
29	BOWIE STATE COLLEGE	Bonavito, N. L.	GSFC	Bhatia, M. S.	NAG 5-499	2876
29	CALIF INST OF TECH	Durbin, P. A.	LERC	Saffman, P. G.	NAG 3-179	1316

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29	CARLETON UNIVERSITY	Connors, M. M.	ARC	George, D. A.	NCA 2-103101	5267
29	CARNEGIE-MELLON UNIV	Park, S. K.	LARC	Casasent, D. P.	NAG 1-575	4322
29	CASE WESTERN RESERVE	Pelouch, J. J.	LERC	Jasiulek, J. N.	NAG 3-487	4076
29	CLEMSON UNIV-CLEMSON	Jones, C. S.	MSFC	Sias, F. R.	NAS 8-36460	4496
29	CLEVELAND STATE UNIV	Davies, R. L.	LERC	Kramerich, G. L.	NCC 3-41	4146
29	COLLEGE OF WM & MARY	Williams, J. R.	LARC	Miller, K.	NAG 1-536	4877
29	COLUMBIA UNIVERSITY	Smith, R. E., Jr.	LARC	Eiseman, P. R.	NAG 1-427	3715
29	COLUMBIA UNIVERSITY	Smith, R. E.	LARC	Eiseman, P. R.	NAG 1-617	3718
29	COLUMBIA UNIVERSITY	Smith, R. E.	LARC	Eiseman, P. R.	NCC 1-59	3746
29	DUKE UNIVERSITY	Bavuso, S. J.	LARC	Trivedi, K. S.	NAG 1-70	3956
29	HAMPTON INSTITUTE	Shoosmith, J. N.	LARC	Shah, S. N.	NAG 1-415	4905
29	IOWA STATE UNIV	Weilmuenster, K. J.	LARC	Tannehill, J. C.	NAG 1-313	2729
29	MASS INST OF TECH	Nagel, D. C.	ARC	Simpson, R.	NAS 2-11232	3207
29	MASS INST OF TECH	Zang, T. A.	LARC	Patera, A. T.	NAG 1-574	3119
29	NEW YORK INST TECH	Pohly, J. G.	HQ-U	Williams, T.	NGT 33-230-830	3823
29	NORFOLK STATE UNIV	Shoosmith, J. N.	LARC	Deloatch, S. J.	NAS 1-16921	4917
29	NO CAROLINA STATE U	Lansing, D. L.	LARC	McAllister, D. F.	NAG 1-103	3982
29	OLD DOMINION UNIV	Dagenhart, J. R.	LARC	Grosch, C. E.	NAG 1-352	4931
29	POLY INST OF NY	Schmitt, R. F.	GSFC	Bertoni, H. L.	NAG 5-714	3842
29	RICE UNIVERSITY	Arndt, G. D.	JSC	De Figueiredo, R. J.	NAS 9-17145	4599
29	RICE UNIVERSITY	Browne, I. D.	JSC	Scott, D. W.	NCC 9-10	4601
29	SAN JOSE STATE UNIV	Bowles, J. V.	ARC	Huynh, L. C.	NCC 2-216	1475
29	STANFORD UNIVERSITY	Deckert, W. H.	ARC	Dunn, D. A.	NCA 2-745310	1580
29	STANFORD UNIVERSITY	Pulliam, T. H.	ARC	Spreiter, J. R.	NCA 2-745404	1587
29	STANFORD UNIVERSITY	Wolfe, J. H.	ARC	Peterson, A. M.	NCA 2-745408	1591
29	STANFORD UNIVERSITY	Olsen, G. C.	LARC	Hughes, T. J.	NAG 1-361	1490
29	STEVENS INST OF TECH	Bavuso, S. J.	LARC	Swern, F. L.	NAG 1-587	3657
29	TEXAS A&M UNIVERSITY	Weiler, J. D.	MSFC	Shannon, R. E.	NAS 8-35972	4649
29	UNIV OF AKRON	Tanner, J. A.	LARC	Padovan, J.	NAG 1-444	4198
29	UNIV CALIF-BERKELEY	MacElroy, R. D.	ARC	Auslander, D. M.	NCC 2-257	1731
29	UNIV CALIF-L ANGELES	Anderson, K. F.	ARC	Levan, N.	NAG 2-303	1800
29	UNIV CALIF-L ANGELES	Anderson, K. F.	ARC	Omura, J. K.	NAG 2-304	1801
29	UNIV CALIF-L ANGELES	Anderson, K. F.	ARC	Balakrishnan, A. V.	NAG 2-367	1805
29	UNIV CALIF-S BARBARA	Lawless, J. G.	ARC	Smith, T. R.	NCC 2-359	2002
29	UNIV OF CENTRAL FLA	Lin, F. N.	KSC	Hosler, R.	NAS10-11117	2352
29	UNIV COLORADO-BOLDR	Esenwein, G. F.	HQ-EE	Hansen, E. L.	NASW 3730	2180
29	UNIV HOUSTON-HOUSTON	Tobak, M.	ARC	Golubitsky, M.	NAG 2-279	4682
29	UNIV OF KANSAS	Gupta, K. K.	ARC	Fortin, P. E.	NCC 2-251	2814
29	UNIV MARYLAND-COL PK	Price, R. D.	GSFC	Ragan, R. M.	NAG 5-512	2967
29	UNIV MO-COLUMBIA	Porter, J.	JSC	Tranter, W. H.	NAS 9-15477	3499
29	UNIV OF PENNSYLVANIA	Woolford, B. J.	JSC	Altschuler, M. D.	NAS 9-17003	4436
29	UNIV TEXAS-ARLINGTON	Lum, H.	ARC	Starks, S. A.	NCA 2-12	4726
29	UNIV OF WALES	Bey, K. S.	LARC	Morgan, K.	NAGW 478	5274
29	WICHITA STATE UNIV	Chappelle, T.	HQ-LB	Tomayko, J. E.	NASW 3714	2832
31	ARIZONA STATE UNIV	Brinton, H. C.	HQ-EL	Smith, B. A.	NAGW 519	1155
31	ARIZONA STATE UNIV	Boyce, J. M.	HQ-EL	Greeley, R.	NSG 7548	1178
31	JOHNS HOPKINS UNIV	Susskind, J.	GSFC	Phillips, O. M.	NAG 5-200	2891
31	JOHNS HOPKINS UNIV	Kaye, J.	GSFC	Strobel, D. E.	NAG 5-489	2895
31	JOHNS HOPKINS UNIV	Brinton, H. C.	HQ-EL	Strobel, D. F.	NAGW 648	2906
31	AUBURN UNIV-AUBURN	Shackelford, B.	MSFC	Foster, W. A., Jr.	NAS 8-33886	1017
31	AUBURN UNIV-AUBURN	Moore, R. L.	MSFC	Hinata, S.	NAS 8-35057	1018
31	AUBURN UNIV-AUBURN	Cox, J. W.	MSFC	Day, W. B.	NAS 8-35992	1021
31	BOSTON UNIVERSITY	Harwell, B.	MSFC	Meudillo, M.	NAS 8-32844	3059
31	BOSTON UNIVERSITY	Reasoner, D. L.	MSFC	Mendillo, M.	NAS 8-36324	3060
31	COLORADO COL-COL SPG	Gregory, G. L.	LARC	Huebert, B. J.	NAG 1-572	2083
31	CALIF INST OF TECH	Richard, H. L.	GSFC	Zirin, H.	NAS 5-27269	1354
31	CALIF INST OF TECH	Wales, R. O.	GSFC	Stone, D. E.	NAS 5-28449	1356
31	CALIF INST OF TECH	Smith, M. H.	HQ-EE	Yung, Y. L.	NAGW 413	1345
31	CALIF INST OF TECH	Brinton, H. C.	HQ-EL	Ingersoll, A. P.	NAGW 58	1334
31	CALIF INST OF TECH	Murphy, R. E.	HQ-EL	Farmer, C. B.	NAGW 223	1340

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31	CALIF INST OF TECH	Brinton, H. C.	HQ-EL	Yung, Y. L.	NAGW 313	1344
31	CALIF INST OF TECH	Brinton, H. C.	HQ-EL	Yung, Y. L.	NSG 7376	1379
31	CAL STATE U-FULLERTN	Brinton, H. C.	HQ-EL	Ryan, J. A.	NSG 7614	1397
31	CITY COLLEGE OF N Y	Canuto, V. C.	GSFC	Arons, M.	NAG 5-372	3696
31	CITY U N Y-GRAD SCHL	Alexander, M. B.	MSFC	Tchen, C. H.	NAS 8-34622	3701
31	CLARKSON UNIVERSITY	Fowles, W. W.	MSFC	Hyun, J.	NAS 8-34750	3707
31	CLEMSON UNIV-CLEMSON	Thiele, O. W.	GSFC	Ulbrich, C. W.	NAG 5-232	4495
31	CLEMSON UNIV-CLEMSON	Adler, R. F.	GSFC	Gentry, R. C.	NCC 5-27	4498
31	COLGATE UNIVERSITY	Deming, L. D.	GSFC	Glenar, D. A.	NAG 5-478	3713
31	COLLEGE OF WM & MARY	Sullivan, E. M.	LARC	Benner, D. C.	NCC 1-43	4884
31	COLLEGE OF WM & MARY	Seals, R. K.	LARC	Rinsland, C. P.	NCC 1-61	4886
31	COLLEGE OF WM & MARY	Harriss, R. C.	LARC	Bartlett, K. B.	NCC 1-82	4893
31	COLLEGE OF WM & MARY	Grose, W. L.	LARC	Gapcynski, J. P.	NCC 1-83	4894
31	COLLEGE OF WM & MARY	Sullivan, E. M.	LARC	Austin, J.	NCC 1-86	4895
31	COLLEGE OF WM & MARY	Sullivan, E. M.	LARC	Gordley, L. W.	NCC 1-91	4896
31	COLORADO STATE UNIV	Shukla, J.	GSFC	Stevens, D. E.	NAG 5-136	2090
31	COLORADO STATE UNIV	Rodgers, E.	GSFC	Gray, W. M.	NAG 5-299	2092
31	COLORADO STATE UNIV	Keyser, D.	GSFC	Pielke, R. A.	NAG 5-359	2093
31	COLORADO STATE UNIV	King, M. D.	GSFC	Cox, S. K.	NAG 5-387	2094
31	COLORADO STATE UNIV	McDougal, D. S.	LARC	Cox, S. K.	NAG 1-554	2086
31	COLORADO STATE UNIV	Hall, J. B.	LARC	Vonderhaar, T. H.	NAS 1-16465	2100
31	COLORADO STATE UNIV	Green, W. M.	MSFC	Purdom, J. F.	NAS 8-36472	2102
31	COLORADO STATE UNIV	Dodge, J. C.	HQ-EE	Purdom, J. F.	NAGW 504	2097
31	COLORADO STATE UNIV	Curran, R. J.	HQ-EE	Reiter, E. R.	NAGW 601	2099
31	COLUMBIA UNIVERSITY	Travis, L.	GSFC	Broecker, W. S.	NCC 5-16	3748
31	COLUMBIA UNIVERSITY	Travis, L. D.	GSFC	Broecker, W. S.	NCC 5-29	3750
31	COLUMBIA UNIVERSITY	Hampson, R. F.	HQ-EE	Broecker, W. S.	NAGW 571	3731
31	CORNELL UNIVERSITY	Chandra, S.	HQ-EE	Farley, D. T.	NAGW 362	3780
31	CORNELL UNIVERSITY	Brinton, H. C.	HQ-EL	Gierasch, P. J.	NAGW 576	3786
31	CORNELL UNIVERSITY	Brinton, H. C.	HQ-EL	Sagan, C. E.	NGL 33-010-082	3799
31	CORNELL UNIVERSITY	Brinton, H. C.	HQ-EL	Gierasch, P. J.	NGL 33-010-186	3800
31	CORNELL UNIVERSITY	Brinton, H. C.	HQ-EL	Gierasch, P. J.	NSG 7612	3815
31	DREXEL UNIVERSITY	Fullerjr, W. H.	LARC	Friend, J. P.	NAG 1-200	4338
31	DREXEL UNIVERSITY	Hall, J. B., Jr.	LARC	House, F. B.	NAS 1-16428	4347
31	DREXEL UNIVERSITY	Wilson, G. S.	MSFC	S'cnafer, A.	NAS 8-34833	4349
31	DREXEL UNIVERSITY	Smith, M. A.	HQ-EE	Abbas, M. M.	NAGW 431	4345
31	DREXEL UNIVERSITY	Smith, M. A.	HQ-EE	Abbas, M. M.	NAGW 737	4346
31	DUKE UNIVERSITY	Hampson, R. F.	HQ-EE	Delucia, F. C.	NSG 7540	3965
31	FLORIDA STATE UNIV	Chou, S. H.	GSFC	Stage, S. A.	NAG 5-332	2336
31	FLORIDA STATE UNIV	Cofer, W. R.	LARC	Andreae, M. O.	NAG 1-588	2329
31	FLORIDA STATE UNIV	Greene, W. M.	MSFC	Fuelberg, H. E.	NAG 8-33	2337
31	FLORIDA STATE UNIV	Smith, M. A.	HQ-EE	Hunt, R. H.	NSG 7473	2341
31	GEORGE WASHINGTON U	Sullivan, E. M.	LARC	Liebowitz, H.	NCC 1-19	2278
31	GEORGE WASHINGTON U	Smith, G. L.	LARC	Liebowitz, H.	NSG 1555	2288
31	GEORGE WASHINGTON U	Curran, R. J.	HQ-EE	Dressler, R. F.	NAGW 720	2272
31	GEORGIA INST OF TECH	Ferry, G. V.	ARC	Grams, G. W.	NSG 2363	2451
31	GEORGIA INST OF TECH	Rouzer, L. E.	GSFC	Cunnold, D.	NAS 5-27264	2438
31	GEORGIA INST OF TECH	Dod, L. R.	GSFC	Gagliano, J.	NAS 5-28132	2439
31	GEORGIA INST OF TECH	Dod, L. R.	GSFC	Gagliano, J.	NAS 5-28747	2442
31	GEORGIA INST OF TECH	Browell, E. V.	LARC	Davis, D. D.	NAG 1-50	2409
31	GEORGIA INST OF TECH	Reichle, H. G., Jr.	LARC	Chameides, W. L.	NAG 1-385	2410
31	GEORGIA INST OF TECH	McMaster, L. R.	LARC	Grams, G. W.	NAS 1-16356	2434
31	GEORGIA INST OF TECH	McMaster, L. R.	LARC	Cunnold, D. M.	NAS 1-16357	2435
31	GEORGIA INST OF TECH	Schiffer, R. A.	HQ-EE	Kiang, C. S.	NAGW 698	2429
31	GEORGIA INST OF TECH	Butler, D. M.	HQ-EE		NAGW 729	2430
31	GEORGIA INST OF TECH	Brinton, H. C.	HQ-EL	Steffes, P. G.	NAGW 533	2428
31	HARVARD UNIVERSITY	Lundholm, J.	GSFC	Parkinson, W. H.	NAS 5-26557	3089
31	HARVARD UNIVERSITY	Hoell, J. M.	LARC	McElroy, M. B.	NAG 1-55	3069
31	HARVARD UNIVERSITY	Butler, D. M.	HQ-EE	McElroy, M. B.	NAGW 731	3087
31	HARVARD UNIVERSITY	Watson, R. T.	HQ-EE	Anderson, J. G.	NASW 3242	3094

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31	HARVARD UNIVERSITY	Smith, M. A.	HQ-EE	Anderson, J. G.	NASW 3960	3096
31	HARVARD UNIVERSITY	Brinton, H. C.	HQ-EL	McElroy, G. B.	NAGW 417	3083
31	HARVARD UNIVERSITY	Brinton, H. C.	HQ-EL	Goody, R. M.	NGL 22-007-228	3099
31	HOWARD UNIVERSITY	Brinton, H. C.	HQ-EL	Jackson, W. M.	NAGW 446	2303
31	HOWARD UNIVERSITY	Brinton, H. C.	HQ-EL	Okabe, H.	NAGW 785	2305
31	HOWARD UNIVERSITY	Brinton, H. C.	HQ-EL	Jackson, W. M.	NSG 5071	2314
31	IOWA STATE UNIV	Straus, D. M.	GSFC	Chen, T. C.	NAG 5-104	2736
31	IOWA STATE UNIV	Baker, W.	GSFC	Chen, T. C.	NAG 5-355	2737
31	IOWA STATE UNIV	Kalnay, E.	GSFC	Stanford, J. L.	NAG 5-577	2739
31	LEHIGH UNIVERSITY	Boese, R. W.	ARC	Lovejoy, R. W.	NCA 2-380301	4362
31	MASS INST OF TECH	Whitten, R. C.	ARC	Prinn, R. G.	NSG 2010	3261
31	MASS INST OF TECH	Wilheit, T. T.	GSFC	Staelin, D. H.	NAG 5-10	3156
31	MASS INST OF TECH	Kalnay, E.	GSFC	Stone, P. H.	NAG 5-137	3158
31	MASS INST OF TECH	Sud, Y.	GSFC	Eagleson, P.	NAG 5-388	3166
31	MASS INST OF TECH	Kalhay, E.	GSFC	Stone, P. H.	NGR 22-009-727	3255
31	MASS INST OF TECH	Rind, D.	GSFC	Stone, P. H.	NSG 5113	3268
31	MASS INST OF TECH	Adams, W. R.	MSFC	Akin, D. L.	NAS 8-35996	3230
31	MASS INST OF TECH	Smith, M. A.	HQ-EE	Prinn, R. G.	NAGW 474	3195
31	MASS INST OF TECH	Curran, R. J.	HQ-EE	Lindzen, R. S.	NAGW 525	3196
31	MASS INST OF TECH	Watson, R. T.	HQ-EE	Prinn, R. G.	NAGW 560	3197
31	MASS INST OF TECH	Curran, R. J.	HQ-EE	Rambaldi, S.	NAGW 578	3198
31	MASS INST OF TECH	Butler, D. M.	HQ-EE	Newell, R. E.	NAGW 703	3201
31	MASS INST OF TECH	Butler, D. M.	HQ-EE	Prinn, R. G.	NAGW 732	3203
31	MASS INST OF TECH	Butler, D. M.	HQ-EE	Tung, K. K.	NAGW 798	3205
31	MASS INST OF TECH	Quaide, W. L.	HQ-EL	Binsack, J. H.	NSG 7638	3275
31	MISSISSIPPI STATE U	Wilson, H. B.	MSFC	Whitfield, D. L.	NAS 8-36486	3480
31	NEW MEX INST MINING	Vaughan, O. H.	MSFC	Brooks, M.	NAS 8-33817	3665
31	NEW MEX ST U-LAS CR	Brinton, H. C.	HQ-EL	Beebe, R. F.	NAGW 167	3671
31	NEW MEX ST U-LAS CR	Brinton, H. C.	HQ-EL	Beebe, R. F.	NAGW 645	3672
31	NEW YORK UNIVERSITY	Kalnay, E.	GSFC	Isaacson, E.	NAG 5-341	3828
31	NEW YORK UNIVERSITY	Kalnay, E.	GSFC	Ghil, M.	NSG 5130	3838
31	OHIO STATE UNIV	Kakar, R. K.	HQ-EE	Shaw, J. H.	NSG 7479	4193
31	OKLAHOMA STATE UNIV	Tuyahov, A. J.	HQ-EE	Walsh, S. J.	NSG 7640	4284
31	OLD DOMINION UNIV	Browell, E. V.	LARC	Kindle, E. C.	NCC 1-28	4956
31	OLD DOMINION UNIV	McMaster, L. R.	LARC	Copeland, G. E.	NCC 1-96	4966
31	OREGON GRADUATE CTR	Reichle, H. G., Jr.	LARC	Rasmussen, R. A.	NAG 1-160	4298
31	OREGON GRADUATE CTR	Mugler, J. P.	LARC	Rasmussen, R. A.	NAG 1-382	4299
31	OREGON GRADUATE CTR	Hoell, J. M.	LARC	Rasmussen, R. A.	NAG 1-589	4300
31	OREGON GRADUATE CTR	Demore, W. B.	HQ-EE	Rasmussen, R. A.	NAGW 280	4302
31	OREGON GRADUATE CTR	Hampson, R. F.	HQ-EE	Rasmussen, R. A.	NAGW 600	4303
31	OREGON STATE UNIV	Pollack, J. B.	ARC	Barnes, J.	NCA 2-586501	4313
31	OREGON STATE UNIV	Shukla, J.	GSFC	Deardorff, J. W.	NAG 5-51	4305
31	OREGON STATE UNIV	Randall, D. A.	GSFC	Gates, W. L.	NAG 5-206	4306
31	PENN STATE U-UNIV PK	Toon, O. B.	ARC	Carlson, T. N.	NCA 2-589201	4409
31	PENN STATE U-UNIV PK	Pfister, L.	ARC	Warner, T. T.	NCA 2-589301	4410
31	PENN STATE U-UNIV PK	Toon, O. B.	ARC	Carlson, T. N.	NCC 2-316	4413
31	PENN STATE U-UNIV PK	Susskind, J.	GSFC	Herman, R. M.	NAG 5-303	4379
31	PENN STATE U-UNIV PK	Rodgers, E. B.	GSFC	Frank, W. M.	NAG 5-398	4383
31	PENN STATE U-UNIV PK	Schmidlin, F. J.	GSFC	Olivero, J. J.	NAG 5-606	4387
31	PENN STATE U-UNIV PK	Uccellini, L. W.	GSFC	Warner, T.	NSG 5205	4426
31	PENN STATE U-UNIV PK	Kaufman, J. W.	MSFC	Clark, J. H.	NAS 8-33794	4398
31	PENN STATE U-UNIV PK	Fichtl, G. H.	MSFC	Clark, J. H.	NAS 8-33797	4399
31	PENN STATE U-UNIV PK	Kaufman, J. W.	MSFC	Clark, J. H.	NAS 8-36150	4402
31	PURDUE UNIVERSITY	Curran, R. J.	GSFC	Davies, R.	NAG 5-101	2688
31	PURDUE UNIVERSITY	McDougal, D. S.	LARC	Davies, R.	NAG 1-552	2665
31	PURDUE UNIVERSITY	Fichtl, G. H.	MSFC	Smith, P. J.	NAS 8-34009	2699
31	PURDUE UNIVERSITY	Kaufman, J. W.	MSFC	Vincent, D. G.	NAS 8-35187	2701
31	RENSSELAER POLY-NY	Schaefer, D. A.	MSFC	Wiedemeier, H.	NAS 8-33562	3864
31	RICE UNIVERSITY	Taylor, H. A., Jr.	GSFC	Cloutier, P.	NAS 5-28764	4595
31	RICE UNIVERSITY	Brinton, H. C.	HQ-EL	Chamberlain, J. W.	NSG 7043	4610



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31	RICE UNIVERSITY	Brinton, H. C.	HQ-EL	Stebbing, R. F.	NSG 7386	4612
31	ST LOUIS UNIVERSITY	Wilson, G. S.	MSFC	Fuelberg, H. E.	NAS 8-35330	3494
31	ST LOUIS UNIVERSITY	Owens, F. C.	HQ-LB	Fuelberg, H. L.	NGT 26-006-800	3495
31	SAN DIEGO STATE UNIV	Hampson, R. F.	HQ-EE	Lee, L. C.	NAGW 661	1431
31	SAN DIEGO STATE UNIV	Brinton, H. C.	HQ-EL	Young, L.	NAGW 184	1427
31	SAN DIEGO STATE UNIV	Brinton, H. C.	HQ-EL	Young, A. T.	NAGW 250	1429
31	SAN JOSE STATE UNIV	Toon, O. B.	ARC	Goodman, J.	NCC 2-68	1464
31	SAN JOSE STATE UNIV	Danielson, E. F.	ARC	Goodman, J.	NCC 2-73	1465
31	SAN JOSE STATE UNIV	Vedder, J. F.	ARC	Goodman, J.	NCC 2-168	1470
31	SAN JOSE STATE UNIV	Chan, K. R.	ARC	Goodman, J.	NCC 2-211	1474
31	SAN JOSE STATE UNIV	Wingrove, R. C.	ARC	Lester, P. F.	NCC 2-315	1483
31	SO DAKOTA SCHL MINES	Negri, A. J.	GSFC	Doneaud, A. A.	NAG 5-386	4507
31	SO DAKOTA SCHL MINES	Wielicki, B. A.	LARC	Welch, R. M.	NAG 1-307	4504
31	SO DAKOTA SCHL MINES	Crabill, N. L.	LARC	Helsdon, J. H., Jr.	NAG 1-463	4505
31	SO DAKOTA SCHL MINES	Wielicki, B. A.	LARC	Welch, R. M.	NAG 1-542	4506
31	SO UNIV & A&M COL-BR	Carter, D. J., Jr.	LARC	Scott, R. L.	NAS 1-15335	2862
31	STANFORD UNIVERSITY	Wales, R. O.	GSFC	Helliwell, R. A.	NAS 5-28447	1544
31	STANFORD UNIVERSITY	Decher, R.	MSFC	Everitt, C. W.	NAS 8-33796	1545
31	STANFORD UNIVERSITY	Chappell, C. R.	MSFC	Banks, P. M.	NAS 8-34430	1546
31	STANFORD UNIVERSITY	Stone, N. H.	MSFC	Banks, P. M.	NAS 8-35502	1550
31	STANFORD UNIVERSITY	Harwell, R. F.	MSFC	Banks, P. M.	NAS 8-36011	1551
31	STANFORD UNIVERSITY	Brinton, H. C.	HQ-EL	Tyler, G. L.	NAGW 538	1530
31	STANFORD UNIVERSITY	Brinton, H. C.	HQ-EL	Timothy, J. G.	NAGW 627	1535
31	STANFORD UNIVERSITY	Brinton, H. C.	HQ-EL	Eshleman, V. R.	NGL 05-020-014	1640
31	STATE UNIV NY-ALBANY	Snetsinger, K. G.	ARC	Kritz, M. A.	NAG 2-230	3875
31	STATE UNIV NY-ALBANY	Wilhelmi, A. J.	ARC	Kritz, M. A.	NAG 2-277	3876
31	STATE UNIV NY-ALBANY	Russell, P.	ARC	Kritz, M.	NCA 2-748301	3885
31	STATE UNIV NY-ALBANY	Lawless, J. G.	ARC	Kritz, M.	NCA 2-748302	3886
31	STATE UNIV NY-ALBANY	Mugler, J. P., Jr.	LARC	Mohnen, V. A.	NAG 1-365	3873
31	STATE UNIV NY-ALBANY	Ritter, J. A.	LARC	Fitzjarrald, D. R.	NAG 1-583	3874
31	STATE UNIV NY-ALBANY	Christian, H. J.	MSFC	Orville, R. E.	NAS 8-33380	3882
31	STATE UNIV NY-ALBANY	Keller, V. W.	MSFC	Lala, G. G.	NAS 8-36178	3883
31	ST U NY COL-PURCHASE	Straus, D.	GSFC	Tenenbaum, J.	NSG 5077	3942
31	STATE U NY-STONY BRK	Chang, S.	ARC	Owen, T.	NCA 2-760301	3925
31	STATE U NY-STONY BRK	Stewart, R. W.	GSFC	Hogan, J. S.	NCC 5-7	3928
31	STATE U NY-STONY BRK	Keynton, R. J.	LARC	Cess, R. S.	NAS 1-16444	3921
31	STATE U NY-STONY BRK	Hampson, R. F.	HQ-EE	Soloman, P. M.	NAGW 353	3916
31	STATE U NY-STONY BRK	Brinton, H. C.	HQ-EL	Caldwell, J. J.	NAGW 160	3915
31	STATE U NY-STONY BRK	Brinton, H. C.	HQ-EL	Fox, J. L.	NAGW 665	3918
31	STATE U NY-STONY BRK	Brinton, H. C.	HQ-EL	Varanasi, P.	NGR 33-015-139	3929
31	TEXAS A&M UNIVERSITY	Turner, R. E.	MSFC	Scoggins, J. R.	NAS 8-34532	4644
31	TEXAS A&M UNIVERSITY	Arnold, J. E.	MSFC	Scoggins, J. R.	NAS 8-34735	4645
31	TEXAS A&M UNIVERSITY	Arnold, J. E.	MSFC	Huebner, G. L.	NAS 8-34972	4646
31	TEXAS A&M UNIVERSITY	Kaufman, J. W.	MSFC	Thompson, A. H.	NAS 8-35182	4647
31	UNIV ALA-HUNTSVILLE	Tandberghanssen, E.	MSFC	Wu, S. T.	NAS 8-33526	1069
31	UNIV ALA-HUNTSVILLE	Decher, R.	MSFC	Hendricks, J. B.	NAS 8-33809	1072
31	UNIV ALA-HUNTSVILLE	Fishman, G. J.	MSFC	Paciesas, W. S.	NAS 8-34137	1075
31	UNIV ALA-HUNTSVILLE	Richards, L. O.	MSFC	Wu, S. T.	NAS 8-34953	1077
31	UNIV ALA-HUNTSVILLE	Martin, C. L.	MSFC	Chung, T. J.	NAS 8-35052	1079
31	UNIV ALA-HUNTSVILLE	Smith, O. E.	MSFC	Karr, G. P.	NAS 8-35663	1085
31	UNIV ALA-HUNTSVILLE	Roberts, W. T.	MSFC	Wu, S. T.	NAS 8-36102	1091
31	UNIV ALA-UNIVERSITY	Peters, P. N.	MSFC	Bertsch, W.	NAS 8-33507	1105
31	UNIV ALASKA-FAIRBNKS	Milliner, C. F.	GSFC	Brown, N. B.	NAS 5-27428	1119
31	UNIV ALASKA-FAIRBNKS	Reasoner, D. L.	MSFC	Wescott, E. M.	NAS 8-36321	1122
31	UNIV OF ARIZONA	Wolff, C. L.	GSFC	Hill, H. A.	NAG 5-340	1200
31	UNIV OF ARIZONA	Wesenberg, R.	KSC	Krider, E. P.	NAS10-10958	1272
31	UNIV OF ARIZONA	Fowles, W. W.	MSFC	Gall, R. L.	NAS 8-33815	1263
31	UNIV OF ARIZONA	Christian, H. J.	MSFC	Krider, E. P.	NAS 8-34734	1264
31	UNIV OF ARIZONA	Demore, W. B.	HQ-EE	Broadfoot, A. L.	NAGW 807	1254
31	UNIV OF ARIZONA	Butler, D. M.	HQ-EE	Hunten, D. M.	NSG 7485	1305

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31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Sil, G. T.	NAGW 67	1217
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Tomasko, M.	NAGW 331	1226
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Lewis, J. S.	NAGW 340	1228
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Kumar, S.	NAGW 500	1233
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Lewis, J. S.	NAGW 536	1235
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Sill, G. T.	NAGW 561	1238
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Broadfoot, A. L.	NAGW 610	1241
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Tomasko, M. G.	NAGW 639	1242
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Shemansky, D. E.	NAGW 649	1243
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Zellner, B. H.	NAGW 716	1248
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Shemansky, D. E.	NAGW 744	1249
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Hunten, D. M.	NSG 7558	1306
31	UNIV OF ARIZONA	Brinton, H. C.	HQ-EL	Tomasko, M. G.	NSG 7573	1307
31	UNIV OF ARIZONA	Owens, F. C.	HQ-LE	Krider, E. P.	NGT 03-002-808	1295
31	UNIV ARKANSAS-LTL RK	Ragent, B.	ARC	Mazumder, M. K.	NAG 2-147	1311
31	UNIV CALIF-BERKELEY	Wales, R. O.	GSFC	Anderson, K. A.	NAG 5-376	1676
31	UNIV CALIF-BERKELEY	Jones, C. T.	MSFC	Bowyer, S.	NAS 8-32577	1710
31	UNIV CALIF-IRVINE	Smith, M. A.	HQ-EE	Rowland, F. S.	NAGW 452	1783
31	UNIV CALIF-IRVINE	Watson, R. T.	HQ-EE	Rowland, F. S.	NAGW 467	1784
31	UNIV CALIF-IRVINE	Hampson, R. F.	HQ-EE	Rowland, F. S.	NAGW 668	1785
31	UNIV CALIF-L ANGELES	Fimmel, R. O.	ARC	Russell, C. T.	NAS 2-9491	1839
31	UNIV CALIF-L ANGELES	Ehernberger, L. J.	DFRF	Wurtele, M. G.	NSG 4024	1870
31	UNIV CALIF-L ANGELES	Kalnay, E.	GSFC	Ghil, M.	NAG 5-713	1818
31	UNIV CALIF-L ANGELES	Wales, R. O.	GSFC	Russell, C. T.	NAS 5-28448	1849
31	UNIV CALIF-L ANGELES	Woods, D. C.	LARC	Friedlander, S. K.	NAS 1-16674	1838
31	UNIV CALIF-L ANGELES	Smith, M. H.	HQ-EE	Wurtele, M. G.	NAGW 774	1837
31	UNIV CALIF-L ANGELES	Brinton, H. C.	HQ-EL	Siscoe, G. L.	NAGW 87	1828
31	UNIV CALIF-L ANGELES	Brinton, H. C.	HQ-EL	Luhmann, J. G.	NAGW 692	1835
31	UNIV CALIF-L ANGELES	Brinton, H. C.	HQ-EL	Russell, C. T.	NAGW 717	1836
31	UNIV CALIF-L ANGELES	Brinton, H. C.	HQ-EL	Schubert, G.	NSG 7164	1876
31	UNIV CALIF-L ANGELES	Brinton, H. C.	HQ-EL	Coleman, P. J.	NSG 7295	1877
31	UNIV CALIF-SAN DIEGO	Baker, W.	GSFC	Somerville, R. C.	NAG 5-236	1891
31	UNIV CALIF-SAN DIEGO	Szajna, E. F.	GSFC	Austin, R. W.	NAS 5-28021	1933
31	UNIV CALIF-SAN DIEGO	Schiffer, R. A.	HQ-EE	Gauntier, C.	NAGW 697	1923
31	UNIV CALIF-S BARBARA	Sebacher, D. I.	LARC	Melack, J. M.	NAG 1-563	1981
31	UNIV OF CENTRAL FLA	Tilley, R.	KSC	Linton, D. G.	NAG10-13	2348
31	UNIV OF CENTRAL FLA	Boggs, W.	KSC	Khattar, M. K.	NAS10-11174	2353
31	UNIV OF CHICAGO	Kalnay, E.	GSFC	Kuo, H. L.	NAG 5-129	2537
31	UNIV OF CHICAGO	Wales, R. O.	GSFC	Meyer, P.	NAS 5-28500	2569
31	UNIV OF CHICAGO	Guynes, B. V.	MSFC	Myer, P.	NAS 8-32828	2570
31	UNIV OF CHICAGO	Fitzjarrald, D. E.	MSFC	Srivastava, R. C.	NAS 8-34770	2571
31	UNIV OF CHICAGO	Butler, D. M.	HQ-EE	Tiao, G. C.	NAGW 568	2559
31	UNIV OF CHICAGO	Smith, M. H.	HQ-EE	Tiao, G. C.	NAGW 762	2563
31	UNIV OF CHICAGO	Dodge, J. C.	HQ-EE	Fujita, T. T.	NGR 14-001-008	2581
31	UNIV OF CHICAGO	Ormes, J. F.	HQ-EZ	Muller, D.	NSG 7464	2593
31	UNIV COLORADO-BOLDR	Zwally, H. J.	GSFC	Barry, R. G.	NAG 5-142	2121
31	UNIV COLORADO-BOLDR	Mentall, J. E.	GSFC	Mount, G. H.	NAG 5-212	2124
31	UNIV COLORADO-BOLDR	Cahalan, R. F.	GSFC	Crane, R. G.	NAG 5-417	2127
31	UNIV COLORADO-BOLDR	Bullock, G. D.	GSFC	Stewart, A. I.	NAS 5-11405	2162
31	UNIV COLORADO-BOLDR	Browne, W. E.	GSFC	Rottman, G. J.	NAS 5-26172	2163
31	UNIV COLORADO-BOLDR	Rouzer, L.	GSFC	London, J.	NAS 5-27263	2166
31	UNIV COLORADO-BOLDR	Piterski, N.	GSFC	Rottman, G.	NAS 5-27750	2169
31	UNIV COLORADO-BOLDR	Stengle, T. H.	GSFC	Lawrence, G. M.	NAS 5-28037	2170
31	UNIV COLORADO-BOLDR	Frederick, J. E.	GSFC	London, J.	NSG 5153	2193
31	UNIV COLORADO-BOLDR	Jones, C. T.	MSFC	Hart, J. E.	NAS 8-31958	2175
31	UNIV COLORADO-BOLDR	Rosendhal, J. D.	HQ-E	Zweibel, E.	NAGW 404	2148
31	UNIV COLORADO-BOLDR	Chandra, S.	HQ-EE	Rusch, D. W.	NAGW 292	2143
31	UNIV COLORADO-BOLDR	Smith, M. H.	HQ-EE	Salby, M. L.	NAGW 772	2158
31	UNIV COLORADO-BOLDR	Smith, M. A.	HQ-EE	Birks, J. W.	NAGW 793	2159
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Hord, C. W.	NAGW 197	2142

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Timothy, J. G.	NAGW 343	2144
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Barth, C.	NAGW 358	2145
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Esposito, L.	NAGW 389	2147
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Jakosky, B. M.	NAGW 495	2149
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Jakosky, B. M.	NAGW 552	2150
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Lawrence, G. M.	NAGW 563	2151
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Stern, S. A.	NAGW 795	2160
31	UNIV COLORADO-BOLDR	Brinton, H. C.	HQ-EL	Barth, C. A.	NGL 06-003-052	2189
31	UNIV OF DAYTON	Schmidlin, F. J.	GSFC	Luers, J. K.	NAS 5-28297	4247
31	UNIV OF DAYTON	Schmidlin, F. J.	GSFC	Luers, J. K.	NAS 6-3086	4248
31	UNIV OF DAYTON	Camp, D. W.	MSFC	Luers, J. K.	NAS 8-34687	4250
31	UNIV OF DENVER	Vedder, J. F.	ARC	Murcray, D. G.	NAG 2-351	2202
31	UNIV OF DENVER	Margozzi, A.	ARC	Murcray, D. G.	NAS 2-11186	2206
31	UNIV OF DENVER	McMaster, L. R.	LARC	Murcray, D. G.	NAS 1-16306	2205
31	UNIV OF DENVER	Seals, R. K., Jr.	LARC	Goldman, A.	NCC 1-48	2210
31	UNIV OF DENVER	Watson, R. T.	HQ-EE	Murcray, D. G.	NAGW 479	2204
31	UNIV OF FLORIDA	Wilhelmi, A. J.	ARC	Lanzerotti, L. J.	NAS 2-9976	2365
31	UNIV OF FLORIDA	Wesinberg, R.	KSC	Brasley, W.	NAS10-11020	2372
31	UNIV OF FLORIDA	Brunk, W. E.	HQ-EL	Carr, T. D.	NAGW 320	2361
31	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Singer, R. B.	NSG 7590	2507
31	UNIV HOUSTON-HOUSTON	Mead, G. D.	GSFC	Burke, K.	NAS 5-28139	4694
31	UNIV HOUSTON-HOUSTON	Coleman, M.	JSC	Worley, F.	NAS 9-17512	4702
31	UNIV ILLINOIS-URBANA	Fichtl, G. H.	MSFC	Achtemeier, G.	NAS 8-34902	2627
31	UNIV ILLINOIS-URBANA	Hampson, R. F.	HQ-EE	Bowhill, S. A.	NSG 7506	2638
31	UNIV OF IOWA	Wales, R. O.	GSFC	Frank, L. A.	NAS 5-26257	2769
31	UNIV OF IOWA	Wales, R. O.	GSFC	Frank, L.	NAS 5-28700	2776
31	UNIV OF IOWA	Wales, R. O.	GSFC	Gurnett, D. A.	NAS 5-28701	2777
31	UNIV OF IOWA	Shipley, S. T.	LARC	Carmichael, G. R.	NCC 1-97	2780
31	UNIV OF IOWA	Soutullo, B.	MSFC	Shanhan, S. D.	NAS 8-32807	2778
31	UNIV OF KANSAS	Qurney, R.	GSFC	Kanemasu, E. T.	NAG 5-389	2802
31	UNIV OF KANSAS	Pitts, D.	JSC	Ulaby, F. T.	NAS 9-15421	2807
31	UNIV OF KENTUCKY	Reichle, H. G., Jr.	LARC	Peters, L. K.	NSG 1424	2842
31	UNIV MARYLAND-COL PK	Fraser, R. S.	GSFC	Pinker, R. T.	NAG 5-203	2943
31	UNIV MARYLAND-COL PK	Suarez, M.	GSFC	Rodenhuis, D. R.	NAG 5-215	2944
31	UNIV MARYLAND-COL PK	Susskind, J.	GSFC	Thompson, O. E.	NAG 5-292	2952
31	UNIV MARYLAND-COL PK	Thiele, O. W.	GSFC	Baer, F.	NAG 5-309	2953
31	UNIV MARYLAND-COL PK	Sud, Y.	GSFC	Baer, F.	NAG 5-383	2956
31	UNIV MARYLAND-COL PK	Tucker, C. J.	GSFC	Justice, C. O.	NAG 5-399	2959
31	UNIV MARYLAND-COL PK	Randall, D. A.	GSFC	Randall, D. A.	NAG 5-409	2960
31	UNIV MARYLAND-COL PK	Schmugge, T. J.	GSFC	Shukla, J.	NAG 5-492	2965
31	UNIV MARYLAND-COL PK	Meneghini, R.	GSFC	Thompson, O. E.	NAG 5-542	2968
31	UNIV MARYLAND-COL PK	Fellerman, K.	GSFC	Currie, D. S.	NAS 5-25486	2988
31	UNIV MARYLAND-COL PK	Howell, D.	GSFC	Agrawala, A.	NAS 5-27704	2995
31	UNIV MARYLAND-COL PK	Kreins, E.	GSFC	Baer, F.	NAS 5-28150	2997
31	UNIV MARYLAND-COL PK	Wales, R. O.	GSFC	Gloeckler, G.	NAS 5-28704	3001
31	UNIV MARYLAND-COL PK	Kreins, E. R.	GSFC	Baer, F.	NAS 5-29163	3003
31	UNIV MARYLAND-COL PK	Donn, B.	GSFC	Trasco, J. D.	NGL 21-002-033	3017
31	UNIV MARYLAND-COL PK	Hartle, R. E.	GSFC	Matthews, D. L.	NGR 21-002-096	3020
31	UNIV MARYLAND-COL PK	Harriss, R. C.	LARC	Zoller, W. H.	NAG 1-364	2931
31	UNIV MARYLAND-COL PK	Browell, E. V.	LARC	Wilkerson, T. D.	NCC 1-25	3011
31	UNIV MARYLAND-COL PK	Chai, A. T.	LERC	Gammon, R. W.	NAG 3-470	2938
31	UNIV MARYLAND-COL PK	Decher, R.	MSFC	Alley, C. O.	NAS 8-33798	3004
31	UNIV MARYLAND-COL PK	Urban, E. W.	MSFC	Paik, H. J.	NAS 8-33822	3005
31	UNIV MARYLAND-COL PK	Schiffer, R. A.	HQ-EE	Shukla, J.	NAGW 557	2982
31	UNIV MARYLAND-COL PK	Curran, R. J.	HQ-EE	Shukla, J.	NAGW 558	2983
31	UNIV MARYLAND-COL PK	Brinton, H. C.	HQ-EL	Khanna, R. K.	NAGW 637	2985
31	UNIV OF MIAMI	Szajna, E. F.	GSFC	Gordon, H. R.	NAS 5-22963	2389
31	UNIV OF MIAMI	Fowles, W. W.	MSFC	Pitcher, E. J.	NAS 8-33523	2392
31	UNIV OF MIAMI	Brinton, H. C.	HQ-EL	Covey, C.	NAGW 644	2388
31	UNIV MICH-ANN ARBOR	Carle, G. C.	ARC	Wise, D.	NCA 2-440302	3416

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31	UNIV MICH-ANN ARBOR	Frederick, J.	GSFC	Horvath, J. J.	NAG 5-230	3370
31	UNIV MICH-ANN ARBOR	Brace, L. H.	GSFC	Carignan, G. R.	NAG 5-419	3373
31	UNIV MICH-ANN ARBOR	Spencer, N. W.	GSFC	Carignan, G. R.	NAS 5-25002	3399
31	UNIV MICH-ANN ARBOR	Spencer, N. W.	GSFC	Carignan, G. R.	NAS 5-25031	3400
31	UNIV MICH-ANN ARBOR	Niemann, H.	GSFC	Carignan, G.	NAS 5-25153	3402
31	UNIV MICH-ANN ARBOR	Brown, W. H., Jr.	GSFC	Hays, P. B.	NAS 5-26169	3405
31	UNIV MICH-ANN ARBOR	Browne, W.	GSFC	Hays, P.	NAS 5-27751	3407
31	UNIV MICH-ANN ARBOR	Way, S.	GSFC	Carignan, G.	NAS 5-28436	3408
31	UNIV MICH-ANN ARBOR	Reed, E. I.	GSFC	Horvath, J. J.	NSG 5189	3425
31	UNIV MICH-ANN ARBOR	Sullivan, E. M.	LARC	Drayson, S. R.	NAG 1-93	3350
31	UNIV MICH-ANN ARBOR	Smith, G. L.	LARC	Bartman, F. L.	NAG 1-539	3354
31	UNIV MICH-ANN ARBOR	Smith, G. L.	LARC	Bartman, F. L.	NCC 1-76	3417
31	UNIV MICH-ANN ARBOR	Hampson, R. F.	HQ-EE	Meriwether, J. W.	NAGW 32	3385
31	UNIV MICH-ANN ARBOR	Watson, R. T.	HQ-EE	Hays, P. B.	NAGW 514	3391
31	UNIV MICH-ANN ARBOR	Brinton, H. C.	HQ-EL	Cravens, T. E.	NAGW 15	3384
31	UNIV MICH-ANN ARBOR	Brinton, H. C.	HQ-EL	Cravens, T. E.	NAGW 312	3389
31	UNIV MICH-ANN ARBOR	Brinton, H. C.	HQ-EL	Nagy, A. F.	NAGW 631	3392
31	UNIV MICH-ANN ARBOR	Brinton, H. C.	HQ-EL	Atreya, S. K.	NSG 7404	3427
31	U MINN-MNPLS-ST PAUL	Oberbeck, V. R.	ARC	Wilson, J. C.	NAG 2-31	3436
31	U MINN-MNPLS-ST PAUL	Wilhelmi, A. J.	ARC	Wilson, J. C.	NAG 2-284	3438
31	U MINN-MNPLS-ST PAUL	Wilhelmi, A.	ARC	Wilson, J. C.	NAS 2-12090	3456
31	U MINN-MNPLS-ST PAUL	Beswick, A. G.	LARC	Mauersberger, K.	NSG 1431	3467
31	U MINN-MNPLS-ST PAUL	Smith, M. H.	HQ-EE	Carr, R. W.	NAGW 800	3455
31	U MINN-MNPLS-ST PAUL	Brinton, H. C.	HQ-EL	Nier, A. O.	NGL 24-005-009	3463
31	UNIV MISS-UNIVERSITY	Christian, H. J.	MSFC	Marshall, T. C.	NAS 8-35183	3490
31	UNIV NEBRASKA-LINCLN	Schmugge, T. J.	GSFC	Blad, B.	NAG 5-561	3562
31	UNIV NEBRASKA-LINCLN	Brinton, H. C.	HQ-EL	Samson, J. A.	NGR 28-004-021	3565
31	UNIV NEVADA-DRI	Johnson, S. C.	MSFC	Telford, J. W.	NAS 8-34685	3567
31	UNIV NEVADA-DRI	Fitzjarrald, D. E.	MSFC	Telford, J. W.	NAS 8-34731	3568
31	UNIV OF NEVADA-RENO	Fogle, V.	MSFC	Hallett, J.	NAS 8-34605	3571
31	UNIV NEW HAMP-DURHAM	Rambler, M.	HQ-EB	Hines, M. E.	NAGW 512	3589
31	UNIV OF NORTH DAKOTA	Heymsfield, G. M.	GSFC	Paellot, M. R.	NAG 5-541	4023
31	UNIV OF NORTH DAKOTA	Heymsfield, G. M.	GSFC	Paellot, M. R.	NAS 5-28159	4024
31	UNIV OKLAHOMA-NORMAN	Uccellini, L. W.	GSFC	Gal-chen, T.	NAG 5-283	4292
31	UNIV OKLAHOMA-NORMAN	Koch, S. E.	GSFC	Sasaki, Y. K.	NAG 5-289	4293
31	UNIV OKLAHOMA-NORMAN	Petersen, R. A.	GSFC	Carr, F. H.	NAG 5-525	4294
31	UNIV OKLAHOMA-NORMAN	Fitzjarrald, D. E.	MSFC	Doviak, R. J.	NAS 8-34749	4296
31	UNIV OREGON-EUGENE	Hampson, R. F.	HQ-EE	Nolt, I. G.	NAGW 222	4317
31	UNIV OF PITTSBURGH	Brinton, H. C.	HQ-EL	Zipf, E. C.	NGL 39-011-030	4454
31	UNIV OF SO FLORIDA	Hoell, J.	LARC	Braman, R. S.	NAS 1-16844	2399
31	UNIV OF SOUTHERN CAL	Brinton, H. C.	HQ-EL	Judge, D. L.	NAGW 163	2073
31	UNIV OF SOUTHERN CAL	Brinton, H. C.	HQ-EL	Judge, D. L.	NGR 05-018-180	2078
31	UNIV TENNESSEE-KNOXV	Watson, W. R.	LARC	Hariharan, S. I.	NAG 1-527	4522
31	UNIV TENNESSEE-KNOXV	Fowles, W. W.	MSFC	Antar, B. N.	NAS 8-33386	4538
31	UNIV TENNESSEE-KNOXV	Turner, R. E.	MSFC	Frost, W.	NAS 8-34627	4541
31	UNIV TENNESSEE-KNOXV	Campbell, W.	MSFC	Frost, W.	NAS 8-35347	4542
31	UNIV TENNESSEE-KNOXV	Arnold, J.	MSFC	Frost, W.	NAS 8-35973	4543
31	UNIV TENNESSEE-KNOXV	Campbell, W.	MSFC	Frest, W.	NAS 8-36177	4544
31	UNIV TENNESSEE-KNOXV	Brinton, H. C.	HQ-EL	Fox, K.	NAGW 125	4536
31	UNIV TEXAS-AUSTIN	Mead, G. D.	GSFC	Tapley, B. D.	NAS 5-28192	4753
31	UNIV TEXAS-DALLAS	Wales, R. O.	GSFC	Heikkila, W. J.	NAG 5-366	4785
31	UNIV TEXAS-DALLAS	Brace, L. H.	GSFC	Heikkila, W. J.	NSG 5085	4803
31	UNIV TEXAS-DALLAS	Brace, L. H.	GSFC	Hoffman, J. H.	NSG 5087	4804
31	UNIV TEXAS-DALLAS	Jones, C. T.	MSFC	Tinsley, B. A.	NAS 8-33827	4796
31	UNIV TEXAS-DALLAS	Lynch, J. T.	HQ-EE	Hanson, W. B.	NGR 44-004-120	4801
31	UNIV TEXAS-DALLAS	Brinton, H. C.	HQ-EL	Cunningham, A. J.	NAGW 632	4789
31	UNIV TEXAS-DALLAS	Brinton, H. C.	HQ-EL	Johnson, F. S.	NGL 44-004-026	4799
31	UNIV OF UTAH	Kalnay, E.	GSFC	Paegle, J. N.	NAG 5-127	4831
31	UNIV OF UTAH	Brinton, H. C.	HQ-EL	Sassen, K.	NAGW 82	4833
31	UNIV OF VIRGINIA	Halem, M.	GSFC	Warner, C.	NAG 5-297	5001

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31	UNIV OF VIRGINIA	Jones, J. L.	LARC	Singer, S. F.	NAS 1-16550	5011
31	UNIV OF VIRGINIA	Shipley, S. T.	LARC	Garstang, M.	NAS 1-17671	5012
31	UNIV OF VIRGINIA	Shipley, S. T.	LARC	Garstang, M.	NCC 1-95	5017
31	UNIV OF VIRGINIA	Brinton, H. C.	HQ-EL	Johnson, R. E.	NAGW 461	5008
31	UNIV OF WASHINGTON	Summers, A. L.	ARC	Holton, J. R.	NAG 2-66	5103
31	UNIV OF WASHINGTON	Snetsinger, K. G.	ARC	Charlson, R. J.	NSG 2362	5154
31	UNIV OF WASHINGTON	Wilheit, T. T.	GSFC	Katsaros, K. B.	NAG 5-354	5114
31	UNIV OF WASHINGTON	Wales, R. O.	GSFC	Potter, D. W.	NAG 5-363	5116
31	UNIV OF WASHINGTON	Wales, R. O.	GSFC	Parks, G. K.	NAG 5-373	5117
31	UNIV OF WASHINGTON	Schmugge, T. J.	GSFC	Fritschen, L. J.	NAG 5-521	5118
31	UNIV OF WASHINGTON	Rouzer, L. E.	GSFC	Holton, J. R.	NAS 5-26301	5145
31	UNIV OF WASHINGTON	Brown, I. D.	JSC	Brownlee, D. E.	NSG 9052	5160
31	UNIV OF WASHINGTON	Russell, J. M., III	LARC	Leovy, C. B.	NAS 1-14341	5142
31	UNIV OF WASHINGTON	Hall, J. B.	LARC	Hartman, D. L.	NAS 1-16462	5143
31	UNIV OF WASHINGTON	Smith, R. E.	MSFC	Ely, J. T.	NAS 8-33884	5147
31	UNIV OF WASHINGTON	Smith, M. A.	HQ-EE	Leovy, C. B.	NAGW 471	5133
31	UNIV OF WASHINGTON	Dodge, J. C.	HQ-EE	Katsaros, K. B.	NAGW 501	5134
31	UNIV OF WASHINGTON	Butler, D. M.	HQ-EE	Holton, J. R.	NAGW 662	5135
31	UNIV OF WASHINGTON	Brinton, H. C.	HQ-EL	Tillman, J. E.	NAGW 36	5126
31	UNIV OF WASHINGTON	Brinton, H. C.	HQ-EL	Leovy, C. B.	NSG 7085	5157
31	UNIV WISC-MADISON	Adler, R. F.	GSFC	Schlesinger, R. E.	NAG 5-23	5186
31	UNIV WISC-MADISON	Atlas, R. M.	GSFC	Johnson, D. R.	NAG 5-81	5187
31	UNIV WISC-MADISON	Susskind, J.	GSFC	Suomi, V. E.	NAG 5-274	5189
31	UNIV WISC-MADISON	Kalnag, E.	GSFC	Suomi, V. E.	NAG 5-301	5190
31	UNIV WISC-MADISON	Kalnay, E.	GSFC	Wahba, G.	NAG 5-316	5191
31	UNIV WISC-MADISON	Baker, W.	GSFC	Horn, L. H.	NAG 5-385	5194
31	UNIV WISC-MADISON	Adler, R. F.	GSFC	Martin, D. W.	NAG 5-391	5195
31	UNIV WISC-MADISON	Atlas, R. M.	GSFC	Smith, W. L.	NAG 5-498	5198
31	UNIV WISC-MADISON	Cahalan, R. F.	GSFC	Weinman, J. A.	NAG 5-580	5199
31	UNIV WISC-MADISON	Hurley, E. J.	GSFC	Smith, W. L.	NAS 5-27608	5225
31	UNIV WISC-MADISON	Helfand, M.	GSFC	Herman, G. F.	NSG 5223	5242
31	UNIV WISC-MADISON	McDougal, D. S.	LARC	Suomi, V. E.	NAG 1-553	5175
31	UNIV WISC-MADISON	Hall, J. B., Jr.	LARC	Smith, W. L.	NAS 1-16507	5216
31	UNIV WISC-MADISON	Keynton, R. J.	LARC	Suomi, V. E.	NAS 1-17688	5217
31	UNIV WISC-MADISON	Arnold, J. E.	MSFC	Suomi, V. E.	NAS 8-33799	5226
31	UNIV WISC-MADISON	Wilson, G. S.	MSFC	Suomi, V. E.	NAS 8-34732	5227
31	UNIV WISC-MADISON	Christian, H. J.	MSFC	Martin, D.	NAS 8-35981	5228
31	UNIV WISC-MADISON	Green, W. M.	MSFC	Anderson, C. E.	NAS 8-36547	5229
31	UNIV WISC-MADISON	Smith, M. A.	HQ-EE	Reinsel, G. C.	NAGW 756	5214
31	UNIV WISC-MADISON	Brinton, H. C.	HQ-EL	Suomi, V. E.	NAGW 314	5208
31	UNIV WISC-MADISON	Brinton, H. C.	HQ-EL	Suomi, V. E.	NGR 50-002-189	5238
31	UNIV WISC-MILWAUKEE	Lau, W. K.	GSFC	Sikdar, D. N.	NAG 5-384	5245
31	UNIV OF WYOMING	Simpson, J.	GSFC	Cooper, W. A.	NAS 5-27783	5260
31	UNIV OF WYOMING	McMaster, L. R.	LARC	Pepin, T. J.	NAS 1-16305	5257
31	UNIV OF WYOMING	Owens, T. L.	LARC	Hoffman, D. J.	NAS 1-17735	5258
31	UNIV OF WYOMING	Schiffer, R. A.	HQ-EE	Hofmann, D. J.	NAGW 430	5255
31	UTAH STATE UNIV	Jones, C. T.	MSFC	Torr, M. R.	NAS 8-33992	4854
31	UTAH STATE UNIV	Watson, R. T.	HQ-EE	Torr, M. R.	NAGW 354	4847
31	UTAH STATE UNIV	Demore, W. B.	HQ-EE	Torr, M. R.	NAGW 775	4850
31	UTAH STATE UNIV	Brinton, H. C.	HQ-EL	Miller, K. L.	NAGW 689	4849
31	WASHINGTON UNIVERSTY	Browne, I. D.	JSC	Hohenberg, C. M.	NAG 9-7	3523
31	WASHINGTON UNIVERSTY	Brinton, H. C.	HQ-EL	Kahn, R.	NAGW 660	3536
31	WAYNE STATE UNIV	Margozzi, A. P.	ARC	Wang, C. C.	NAG 2-39	3430
31	WEST VIRGINIA UNIV	Luther, M. R.	LARC	Mahan, J. R.	NAG 1-433	5166
31	WESTRN KENTUCKY UNIV	Green, J. L.	MSFC	Six, N. F.	NAS 8-34424	2847
31	YALE UNIVERSITY	Fichel, B. G.	MSFC	Saltzman, B.	NAS 8-34903	2236
31	YALE UNIVERSITY	Kaufman, J. W.	MSFC	Saltzman, B.	NAS 8-36356	2237
32	ARIZONA STATE UNIV	Smith, B. F.	ARC	Greeley, R.	NCC 2-346	1168
32	ARIZONA STATE UNIV	Pollack, J.	ARC	Greeley, R.	NSG 2284	1174
32	ARIZONA STATE UNIV	Welker, J. E.	GSFC	Yuen, D. A.	NAG 5-400	1142

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32	ARIZONA STATE UNIV	Browne, I. D.	JSC	Buseck, P. R.	NAG 9-59	1147
32	ARIZONA STATE UNIV	Browne, I. D.	JSC	Larimer, J. W.	NAG 9-79	1148
32	ARIZONA STATE UNIV	Devincenzi, D. L.	HQ-EB	Cronin, J. R.	NSG 7255	1176
32	ARIZONA STATE UNIV	Scott, D. H.	HQ-EL	Malin, M. C.	NAGW 1	1149
32	ARIZONA STATE UNIV	Quaide, W. L.	HQ-EL	Greeley, R.	NAGW 56	1150
32	ARIZONA STATE UNIV	Boyce, J. M.	HQ-EL	Greeley, R.	NAGW 132	1151
32	ARIZONA STATE UNIV	Boyce, J. M.	HQ-EL	Holloway, J. R.	NAGW 182	1152
32	ARIZONA STATE UNIV	Boyce, J. M.	HQ-EL	Sheridan, M. F.	NAGW 245	1153
32	ARIZONA STATE UNIV	Boyce, J. M.	HQ-EL	Greeley, R.	NAGW 263	1154
32	ARIZONA STATE UNIV	Quaide, W. L.	HQ-EL	Malin, M. C.	NAGW 524	1156
32	ARIZONA STATE UNIV	Boyce, J. M.	HQ-EL	Fink, J.	NAGW 529	1157
32	ARIZONA STATE UNIV	Brinton, H. C.	HQ-EL	Greeley, R.	NAGW 580	1159
32	ARIZONA STATE UNIV	Quaide, W. L.	HQ-EL	Malin, M. C.	NASW 4075	1161
32	ARIZONA STATE UNIV	Boyce, J. M.	HQ-EL	Greeley, R.	NSG 7415	1177
32	ARIZONA STATE UNIV	Owens, F. C.	HQ-LE	Greeley, R.	NGT 03-001-802	1172
32	JOHNS HOPKINS UNIV	Welker, J.	GSFC	Marsh, B. D.	NAG 5-32	2890
32	JOHNS HOPKINS UNIV	Walter, L. S.	GSFC	Marsh, B. D.	NAG 5-531	2896
32	JOHNS HOPKINS UNIV	Boyce, J. M.	HQ-EL	Marsh, B. D.	NAGW 425	2902
32	BOSTON UNIVERSITY	Devincenzi, D. L.	HQ-EB	Margulis, L.	NGR 22-004-025	3061
32	BROWN UNIVERSITY	Broderick, J. C.	GSFC	Head, J. W.	NAS 5-26729	4476
32	BROWN UNIVERSITY	Phinney, W. C.	JSC	Parmentier, E. M.	NAG 9-77	4465
32	BROWN UNIVERSITY	Rosendhal, J. D.	HQ-E	Goettel, K. A.	NAGW 657	4471
32	BROWN UNIVERSITY	Evans, D. L.	HQ-EE	Pieters, C. M.	NASW 4048	4479
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Pieters, C. M.	NAGW 28	4467
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Head, J. W.	NAGW 137	4468
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Grieve, R. A.	NAGW 454	4469
32	BROWN UNIVERSITY	Quaide, W. L.	HQ-EL	Head, J. W., III	NAGW 527	4470
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Schultz, P. H.	NAGW 705	4472
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Head, J. W., III	NAGW 713	4473
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Goettel, K. A.	NAGW 745	4474
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Schultz, P. H.	NASW 3508	4477
32	BROWN UNIVERSITY	Quaide, W. L.	HQ-EL	Pieters, C.	NASW 3913	4478
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Head, J. W.	NGR 40-002-088	4480
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Head, J. W.	NGR 40-002-116	4481
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Head, J. W.	NSG 7569	4485
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Head, J. W.	NSG 7570	4486
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Rutherford, M. J.	NSG 7589	4487
32	BROWN UNIVERSITY	Boyce, J. M.	HQ-EL	Parmentier, E. M.	NSG 7605	4488
32	BROWN UNIVERSITY	Boyce, J.	HQ-	Pieters, C. M.	NAGW 748	4475
32	CALIF INST OF TECH	Welker, J. E.	GSFC	Hager, B. H.	NAG 5-315	1322
32	CALIF INST OF TECH	Mead, G. D.	GSFC	Hager, B. H.	NAS 5-27226	1353
32	CALIF INST OF TECH	Browne, I. D.	JSC	Wasserburg, G. J.	NAG 9-43	1329
32	CALIF INST OF TECH	Boyce, J. M.	HQ-EL	Stevenson, D. J.	NAGW 185	1337
32	CALIF INST OF TECH	Boyce, J. M.	HQ-EL	Haff, P. K.	NAGW 202	1338
32	CALIF INST OF TECH	Quaide, W. L.	HQ-EL	Ahrens, T. J.	NAGW 205	1339
32	CALIF INST OF TECH	Boyce, J. M.	HQ-EL	Stolper, E.	NAGW 257	1343
32	CALIF INST OF TECH	Boyce, J. M.	HQ-EL	Stevenson, D. J.	NAGW 450	1346
32	CALIF INST OF TECH	Brinton, H. C.	HQ-EL	Ingersoll, A. P.	NAGW 555	1348
32	CALIF INST OF TECH	Boyce, J. M.	HQ-EL	Ahrens, T. J.	NGL 05-002-105	1367
32	CALIF INST OF TECH	Boyce, J. M.	HQ-EL	Ahrens, T. J.	NSG 7129	1377
32	CALIF INST OF TECH	Boyce, J. M.	HQ-EL	Burnett, D. S.	NSG 7202	1378
32	CALIF INST OF TECH	Tuyahov, A. J.	HQ-EL	Anderson, D. L.	NSG 7610	1380
32	CALIF INST OF TECH	Boyce, J. M.	HQ-EZ	Murray, B.	NAGW 549	1347
32	CAL POLY ST U-POMONA	Boyce, J. M.	HQ-EL	Rossbacher, L. A.	NAGW 715	1382
32	COLORADO STATE UNIV	Boyce, J. M.	HQ-EL	Schumm, S. A.	NAGW 535	2098
32	COLUMBIA UNIVERSITY	Welker, J. E.	GSFC	Cochran, J. R.	NAG 5-402	3722
32	COLUMBIA UNIVERSITY	Mead, G. D.	GSFC	Scholz, C. H.	NAG 5-446	3723
32	COLUMBIA UNIVERSITY	Kouns, C. W.	GSFC	Labrecque, J. L.	NAG 5-598	3724
32	COLUMBIA UNIVERSITY	Mead, G. D.	GSFC	Johnson, T. L.	NAS 5-27237	3736
32	COLUMBIA UNIVERSITY	Mead, G. D.	GSFC	Scholz, C. H.	NAS 5-27239	3737

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32	COLUMBIA UNIVERSITY	Estess, R. S.	NSTL	Unavailable	NAS13-260	3743
32	COLUMBIA UNIVERSITY	Hampson, R. F.	HQ-EE	Broecker, W. S.	NAGW 667	3734
32	CORNELL UNIVERSITY	Welker, J. E.	GSFC	Turcott, D.	NAG 5-319	3771
32	CORNELL UNIVERSITY	Mead, G. D.	GSFC	Oliver, J.	NAS 5-27232	3792
32	CORNELL UNIVERSITY	Mead, G. D.	GSFC	Turcotte, D. L.	NAS 5-27340	3793
32	CORNELL UNIVERSITY	Oseroff, H.	GSFC	Bird, J. M.	NAS 5-28739	3794
32	CORNELL UNIVERSITY	Oseroff, H.	GSFC	Bloom, A. L.	NAS 5-28767	3795
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Thomas, P. C.	NAGW 111	3777
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Burns, J. A.	NAGW 310	3779
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Dermott, S. F.	NAGW 392	3781
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Ostro, S. J.	NAGW 543	3784
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Nicholson, P. D.	NAGW 544	3785
32	CORNELL UNIVERSITY	Scott, D. H.	HQ-EL	Turcotte, D. L.	NAGW 797	3790
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Veverka, J.	NASW 3342	3797
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Turcotte, D. L.	NGR 33-010-108	3802
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Sagan, C. E.	NGR 33-010-220	3804
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Veverka, J.	NSG 7156	3813
32	CORNELL UNIVERSITY	Boyce, J. M.	HQ-EL	Veverka, J.	NSG 7606	3814
32	CORNELL UNIVERSITY	Owens, F. C.	HQ-LE	Turcotte, D. L.	NGT 33-010-803	3807
32	DARTMOUTH COLLEGE	Oseroff, H.	GSFC	Naslund, H. R.	NAS 5-28738	3578
32	DUKE UNIVERSITY	Joyce, A. T.	NSTL	Stone, D. E.	NAS13-255	3962
32	HARVARD UNIVERSITY	Welker, J. E.	GSFC	England, P. C.	NAG 5-314	3072
32	HARVARD UNIVERSITY	Mead, G. D.	GSFC	Shapiro, I. I.	NAG 5-538	3074
32	HARVARD UNIVERSITY	Mead, G. D.	GSFC	O'connell, R. J.	NAS 5-27229	3090
32	HARVARD UNIVERSITY	Mead, G. D.	GSFC	Shapiro, I. I.	NAS 5-27571	3091
32	HARVARD UNIVERSITY	Mead, G. D.	GSFC	Shapiro, I. I.	NAS 5-27739	3092
32	HARVARD UNIVERSITY	Phinney, W. C.	JSC	Cameron, A. G.	NAG 9-89	3079
32	HARVARD UNIVERSITY	Phinney, W. C.	JSC	Jacobsen, S. B.	NAG 9-90	3080
32	HARVARD UNIVERSITY	Devincenzi, D. L.	HQ-EB	Holland, A. D.	NAGW 599	3085
32	HARVARD UNIVERSITY	Devincenzi, D. L.	HQ-EB	Barghoorn, R. S.	NGL 22-007-069	3098
32	HARVARD UNIVERSITY	Brinton, H. C.	HQ-EL	McElroy, M. B.	NAGW 556	3084
32	HARVARD UNIVERSITY	Boyce, J. M.	HQ-EL	Cameron, A. G.	NGR 22-007-269	3100
32	HARVEY MUDD COLLEGE	Anderson, K. F.	DFRF	Tanenbaum, B. S.	NCA 2-283304	1416
32	HOWARD UNIVERSITY	Owens, F. C.	HQ-LE	Dey, B.	NGT 09-011-804	2312
32	INDIANA U-BLOOMINGTN	Browne, I. D.	JSC	Basu, A.	NSG 9077	2652
32	KANSAS STATE UNIV	Boyce, J. M.	HQ-EL	Underwood, J. R., Jr.	NAGW 510	2785
32	LAWRENCE UNIVERSITY	Boyce, J. M.	HQ-EL	Read, W. F.	NAGW 658	5171
32	MASS INST OF TECH	Kouns, C. W.	GSFC	Molnar, P.	NAG 5-19	3157
32	MASS INST OF TECH	Kouns, C. W.	GSFC	Molnar, P.	NAG 5-149	3159
32	MASS INST OF TECH	Kouns, C. W.	GSFC	Molnar, P.	NAG 5-300	3162
32	MASS INST OF TECH	Welker, J. E.	GSFC	Gaposchkin, E. M.	NAG 5-360	3165
32	MASS INST OF TECH	Welker, J. E.	GSFC	Parsons, B.	NAG 5-415	3167
32	MASS INST OF TECH	Mead, G. D.	GSFC	Jordan, T. H.	NAG 5-459	3169
32	MASS INST OF TECH	Schmugge, T.	GSFC	Eagleson, P. S.	NAG 5-510	3171
32	MASS INST OF TECH	Kouns, C. W.	GSFC	Molnar, P.	NAG 5-524	3172
32	MASS INST OF TECH	Welker, J. E.	GSFC	Royden, L. H.	NAG 5-532	3173
32	MASS INST OF TECH	Shiue, J. C.	GSFC	Kong, J. A.	NAS 5-26861	3212
32	MASS INST OF TECH	Mead, G. D.	GSFC	Solomon, S. C.	NAS 5-27339	3214
32	MASS INST OF TECH	Wildes, W.	GSFC	Niell, A. E.	NAS 5-29120	3222
32	MASS INST OF TECH	Quaide, W. L.	HQ-EL	Solomon, S.	NAGW 191	3188
32	MASS INST OF TECH	Boyce, J. M.	HQ-EL	Pattengill, G. H.	NAGW 433	3192
32	MASS INST OF TECH	Boyce, J. M.	HQ-EL		NAGW 656	3199
32	MASS INST OF TECH	Boyce, J. M.	HQ-EL	Wisdom, J.	NAGW 706	3202
32	MASS INST OF TECH	Boyce, J. M.	HQ-EL	Huguenin, R. L.	NSG 7081	3269
32	MASS INST OF TECH	Boyce, J. M.	HQ-EL	Solomon, S. C.	NSG 7297	3270
32	MASS INST OF TECH	Boyce, J. M.	HQ-EL	Burns, R. G.	NSG 7604	3274
32	MICHIGAN TECH UNIV	Owens, F. C.	HQ-LB	Bornhorst, T. J.	NGT 23-001-800	3349
32	MONTANA STATE UNIV	Phinney, W. C.	JSC	Mogk, D. W.	NAG 9-68	3548
32	MORGAN STATE UNIV	Wasilewski, P. J.	GSFC	Isuk, E. E.	NAG 5-392	2922
32	MURRAY STATE U-KY	Boyce, J. M.	HQ-EL	Clark, P. E.	NAGW 447	2836

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32	NEW MEX INST MINING	Phinney, W. C.	JSC	Condie, K. C.	NAG 9-74	3663
32	NEW YORK UNIVERSITY	Brinton, H. C.	HQ-EL	Hoffert, M. I.	NAGW 573	3831
32	NE LOUISIANA UNIV	Scott, D. H.	HQ-EL	Dehon, R.	NSG 7534	2860
32	NORTHERN ARIZONA U	Boyce, J. M.	HQ-EL	Barnes, C. W.	NAGW 355	1179
32	NORTHWESTERN UNIV	Mead, G. D.	GSFC	Speed, R. C.	NAS 5-27238	2528
32	OHIO STATE UNIV	Welker, J.	GSFC	Rapp, R. H.	NGR 36-008-161	4185
32	OHIO STATE UNIV	Welker, J.	GSFC	Mueller, I. I.	NSG 5265	4191
32	OREGON STATE UNIV	Mead, G. D.	GSFC	Couch, R. W.	NAS 5-27369	4310
32	OREGON STATE UNIV	Browne, I. D.	JSC	Schmitt, R. A.	NAG 9-63	4307
32	OREGON STATE UNIV	Boyce, J. M.	HQ-EL	Komar, P. D.	NSG 7178	4316
32	OREGON STATE UNIV	Owens, F. C.	HQ-LB	Frenkel, R.	NGT 38-058-800	4315
32	PENN STATE U-UNIV PK	Labovitz, M. L.	GSFC	Smith, C. B.	NAS 5-26215	4396
32	PENN STATE U-UNIV PK	Knott, W. M.	KSC	Cosgrove, D. J.	NAG10-16	4395
32	PENN STATE U-UNIV PK	Owens, F. C.	HQ-LB	Alexander, S. S.	NGT 39-009-803	4417
32	PENN STATE U-UNIV PK	Owens, F. C.	HQ-LB	Alexander, S. S.	NGT 39-009-805	4418
32	PENN STATE U-UNIV PK	Owens, F. C.	HQ-LB	Peterson, G. W.	NGT 39-009-806	4419
32	PRINCETON UNIVERSITY	Schmugge, T. J.	GSFC	Wood, E. F.	NAG 5-491	3622
32	PRINCETON UNIVERSITY	Boyce, J. M.	HQ-EL	Hargraves, R. B.	NAGW 611	3629
32	PRINCETON UNIVERSITY	Owens, F. C.	HQ-LB	Fels, S. B.	NGT 31-001-801	3642
32	PURDUE UNIVERSITY	Kouns, C. W.	GSFC	Crough, S. T.	NAG 5-231	2689
32	PURDUE UNIVERSITY	Kouns, C. W.	GSFC	Hinze, W. J.	NAG 5-304	2691
32	PURDUE UNIVERSITY	Phinney, W. C.	JSC	Morgan, P.	NAG 9-97	2693
32	PURDUE UNIVERSITY	Kitcho, C. A.	HQ-EE	Hinze, W. J.	NAGW 736	2695
32	RENSSELAER POLY-NY	Boyce, J. M.	HQ-EL	Gaffey, M. J.	NAGW 642	3862
32	RICE UNIVERSITY	Browne, I. D.	JSC	Heymann, D.	NAG 9-88	4585
32	RICE UNIVERSITY	Boyce, J. M.	HQ-EL	Clayton, D. D.	NSG 7361	4611
32	RICE UNIVERSITY	Owens, F. C.	HQ-LB	Leeman, W. P.	NGT 44-006-802	4604
32	RUTGERS ST U-N BRNSK	Browne, I. D.	JSC	Hewins, R. H.	NAG 9-35	3652
32	RUTGERS ST U-N BRNSK	Taylor, L. A.	HQ-EL	Herzog, G. F.	NAGW 142	3653
32	RUTGERS ST U-N BRNSK	Taylor, L. A.	HQ-EL	Hewins, R. H.	NSG 7327	3655
32	SAN JOSE STATE UNIV	Squyres, S. W.	ARC	Andersen, D. W.	NCA 2-675402	1457
32	SO DAKOTA SCHL MINES	Browne, I. D.	JSC	Papike, J. J.	NAG 9-22	4508
32	SO ILL UNIV-CARBONDL	Boyce, J. M.	HQ-EL	Kochel, R. C.	NAGW 707	2531
32	SOUTHERN METHODIST U	Kouns, C. W.	GSFC	Phillips, R. J.	NAG 5-298	4614
32	SOUTHERN METHODIST U	Boyce, J. M.	HQ-EL	Phillips, R. J.	NAGW 459	4615
32	STANFORD UNIVERSITY	Scott, D. H.	HQ-EL	Simpson, R. A.	NGR 05-020-649	1646
32	STATE UNIV NY-ALBANY	Welker, J. E.	GSFC	Burke, K.	NAG 5-333	3877
32	STATE UNIV NY-ALBANY	Browne, I. D.	JSC	Delano, J. W.	NAG 9-78	3878
32	STATE UNIV NY-ALBANY	Browne, I. D.	JSC	Berkley, J. L.	NAG 9-82	3879
32	STATE UNIV NY-ALBANY	Williams, R. J.	HQ-EL	Burke, K.	NAGW 489	3880
32	STATE U NY-BINGHAMTN	Welker, J. E.	GSFC	Dickman, S. R.	NAG 5-145	3890
32	STATE U NY-BINGHAMTN	Owens, F. C.	HQ-LB	Dickman, S. R.	NGT 33-188-804	3895
32	STATE UNIV NY-BUFFAL	Goldstein, M. E.	LERC	Taulbee, D. B.	NAG 3-647	3902
32	STATE UNIV NY-BUFFAL	Boyce, J. M.	HQ-EL	Anderson, D.	NAGW 330	3903
32	STATE UNIV NY-BUFFAL	Boyce, J. M.	HQ-EL	King, J. S.	NGR 33-015-108	3905
32	STATE U NY-STONY BRK	Phinney, W. C.	JSC	Hanson, G. N.	NAG 9-85	3914
32	STATE U NY-STONY BRK	Williams, R. J.	HQ-EI	Hanson, G. N.	NAGW 486	3917
32	STATE U NY-STONY BRK	Boyce, J. M.	HQ-EL	Thurber, C. H.	NAGW 760	3920
32	STATE U NY-STONY BRK	Boyce, J. M.	HQ-EL	Owens, T.	NSG 7553	3938
32	SUL ROSS STATE UNIV	Boyce, J. M.	HQ-EL	Whitford-stark, H. J.	NAGW 394	4617
32	SUL ROSS STATE UNIV	Boyce, J. M.	HQ-EL	Whitford-stark H, J. L.	NAGW 605	4618
32	TEXAS A&M UNIVERSITY	Schmugge, T. J.	GSFC	Newton, R. W.	NAG 5-31	4632
32	TEXAS A&M UNIVERSITY	Welker, J. E.	GSFC	Caputo, M.	NAG 5-94	4633
32	TEXAS A&M UNIVERSITY	Van Tassel, K. E.	JSC	Erdman, C. A.	NAS 9-17141	4656
32	TEXAS A&M UNIVERSITY	Boyce, J. M.	HQ-EL	Willemann, R.	NAGW 603	4637
32	TEXAS A&M UNIVERSITY	Boyce, J. M.	HQ-EL	Anderson, D. M.	NAGW 651	4638
32	TEXAS A&M UNIVERSITY	Owens, F. C.	HQ-LB	McGrail, D. W.	NGT 44-001-801	4668
32	UNIV ALA-HUNTSVILLE	West, G. S.	MSFC	Hung, R. J.	NAS 8-33726	1071
32	UNIV ALASKA-FAIRBNKS	Wilson, D. E.	ARC	George, T. H.	NCA 2-20201	1123
32	UNIV ALASKA-FAIRBNKS	Norman, S. D.	ARC	Dean, K. G.	NCA 2-20401	1124



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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
32	UNIV OF ARIZONA	Welker, J. E.	GSFC	Chase, C.	NAG 5-326	1199
32	UNIV OF ARIZONA	Welker, J. E.	GSFC	Chase, C. G.	NAG 5-444	1206
32	UNIV OF ARIZONA	Devincenzi, D. L.	HQ-EB	Nagy, B.	NGR 03-002-171	1283
32	UNIV OF ARIZONA	Boyce, J. M.	HQ-EL	Parmentier, E. M.	NAGW 135	1219
32	UNIV OF ARIZONA	Boyce, J. M.	HQ-EL	Hubbard, W. B.	NAGW 192	1221
32	UNIV OF ARIZONA	Boyce, J. M.	HQ-EL	Baker, V. R.	NAGW 285	1225
32	UNIV OF ARIZONA	Quaide, W. L.	HQ-EL	Herbert, F.	NAGW 424	1230
32	UNIV OF ARIZONA	Boyce, J. M.	HQ-EL	Melosh, H. J.	NAGW 428	1231
32	UNIV OF ARIZONA	Boyce, J. M.	HQ-EL	Sonett, C. P.	NAGW 753	1250
32	UNIV OF ARIZONA	Quaide, W. L.	HQ-EL	Gehrels, T.	NAGW 754	1251
32	UNIV OF ARIZONA	Quaide, W. L.	HQ-EL	Broadfoot, A. L.	NASW 4079	1271
32	UNIV OF ARIZONA	Quaide, W. L.	HQ-EL	Sonett, C. P.	NGR 03-002-370	1285
32	UNIV OF ARIZONA	Boyce, J. M.	HQ-EL	Hood, L. L.	NSG 7020	1297
32	UNIV OF ARIZONA	Boyce, J. M.	HQ-EL	Strom, R. G.	NSG 7146	1302
32	UNIV OF ARIZONA	Boyce, J. M.	HQ-EL	Levy, E. H.	NSG 7419	1304
32	UNIV OF ARIZONA	Boyce, J. M.	HQ-EL	Drake, M. J.	NSG 7576	1308
32	UNIV OF ARIZONA	Owens, F. C.	HQ-LE	Levy, E. H.	NGT 03-002-806	1293
32	UNIV ARKANSAS-FAYETV	Browne, I. D.	JSC	Sears, D. W.	NAG 9-81	1310
32	UNIV CALIF-BERKELEY	Quaide, W. L.	HQ-EL	Hunten, D. M.	NAGW 434	1691
32	UNIV CALIF-BERKELEY	Boyce, J. M.	HQ-EL	Jeanloz, R.	NAGW 604	1696
32	UNIV CALIF-BERKELEY	Quaide, W. L.	HQ-EL	Lin, R.	NAGW 684	1698
32	UNIV CALIF-DAVIS	Pollack, J. B.	ARC	White, B. R.	NCC 2-252	1768
32	UNIV CALIF-DAVIS	Oseroft, H.	GSFC	Finnerty, A. A.	NAS 5-28754	1761
32	UNIV CALIF-L ANGELES	Welker, J.	GSFC	Schubert, G.	NAG 5-152	1809
32	UNIV CALIF-L ANGELES	Welker, J. E.	GSFC	Schubert, G.	NAG 5-317	1810
32	UNIV CALIF-L ANGELES	Mead, G. D.	GSFC	Bird, P.	NAG 5-447	1811
32	UNIV CALIF-L ANGELES	Mead, G. D.	GSFC	Jackson, D. D.	NAS 5-26895	1846
32	UNIV CALIF-L ANGELES	Mead, G. D.	GSFC	Bird, G. P.	NAS 5-26957	1847
32	UNIV CALIF-L ANGELES	Welker, J.	GSFC	Schubert, G.	NSG 5263	1872
32	UNIV CALIF-L ANGELES	Wales, R. O.	GSFC	Crooker, N.	NSG 5351	1874
32	UNIV CALIF-L ANGELES	Browne, I. D.	JSC	Wasson, J. T.	NAG 9-40	1821
32	UNIV CALIF-L ANGELES	Phinney, W. C.	JSC	Depaolo, D. J.	NAG 9-70	1822
32	UNIV CALIF-L ANGELES	Phinney, W. C.	JSC	Kaula, W. M.	NAG 9-76	1823
32	UNIV CALIF-L ANGELES	Phinney, W. C.	JSC	Wasson, J. T.	NAG 9-96	1825
32	UNIV CALIF-L ANGELES	Devincenzi, D. L.	HQ-EB	Bikle, D. D.	NGR 05-007-221	1862
32	UNIV CALIF-L ANGELES	Devincenzi, D. L.	HQ-EB	Schopf, J. W.	NGR 05-007-407	1864
32	UNIV CALIF-L ANGELES	Boyce, J. M.	HQ-EL	Schubert, G.	NAGW 676	1834
32	UNIV CALIF-L ANGELES	Scott, D. H.	HQ-EL	Kaula, W. M.	NGL 05-007-002	1859
32	UNIV CALIF-L ANGELES	French, B. M.	HQ-EL	Wasson, J. T.	NGR 05-007-329	1863
32	UNIV CALIF-L ANGELES	Boyce, J. M.	HQ-EL	Schubert, G.	NSG 7315	1878
32	UNIV CALIF-L ANGELES	Quaide, W. L.	HQ-EL	Busse, F. W.	NSG 7484	1880
32	UNIV CALIF-SAN DIEGO	Welker, J. E.	GSFC	Spiess, F. N.	NAG 5-320	1892
32	UNIV CALIF-SAN DIEGO	Mead, G. D.	GSFC	Agnew, D. C.	NAS 5-27228	1928
32	UNIV CALIF-SAN DIEGO	Mead, G. D.	GSFC	Jordan, T. H.	NAS 5-27234	1929
32	UNIV CALIF-SAN DIEGO	Browne, I. D.	JSC	Lugmair, G. W.	NAG 9-49	1904
32	UNIV CALIF-SAN DIEGO	Browne, I. D.	JSC	Thiemens, M. H.	NAG 9-83	1906
32	UNIV CALIF-SAN DIEGO	Devincenzi, D. L.	HQ-EB	Miller, S. R.	NAGW 20	1907
32	UNIV CALIF-SAN DIEGO	French, B. M.	HQ-EL	Suess, H.	NAGW 103	1909
32	UNIV CALIF-SAN DIEGO	Williams, R. J.	HQ-EL	Arnold, J. R.	NAGW 210	1910
32	UNIV CALIF-SAN DIEGO	Boyce, J. M.	HQ-EL	Pettengill, G. H.	NGR 05-005-005	1947
32	UNIV CALIF-SAN DIEGO	Boyce, J. M.	HQ-EL	Arnold, J. R.	NSG 7027	1952
32	UNIV CALIF-SAN DIEGO	Boyce, J. M.	HQ-EL	Alfven, H.	NSG 7102	1953
32	UNIV CALIF-SAN DIEGO	Taylor, L. A.	HQ-EL	MacDougall, J. D.	NSG 7121	1954
32	UNIV CALIF-SAN FRAN	Devincenzi, D. L.	HQ-EB	Calvin, M.	NAGW 307	1961
32	UNIV CALIF-S BARBARA	Lowman, P. D., Jr.	GSFC	Estes, J. E.	NAG 5-177	1984
32	UNIV CALIF-S BARBARA	Chang, A. T.	GSFC	Dozier, J.	NAG 5-328	1985
32	UNIV CALIF-S BARBARA	Browne, I. D.	JSC	Fuller, M. D.	NAG 9-71	1989
32	UNIV CALIF-S BARBARA	Dietrich, J. W.	JSC	Cisowski, S. M.	NAG 9-72	1990
32	UNIV CALIF-S BARBARA	Boyce, J. M.	HQ-EL	Peale, S. J.	NGR 05-010-062	2005
32	UNIV CALIF-S BARBARA	Owens, F. C.	HQ-LB	Simonett, D. S.	NGT 05-010-804	2009

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32	UNIV CALIF-S BARBARA	Owens, F. C.	HQ-LB	Smith, T.	NGT 05-010-805	2010
32	UNIV CALIF-S CRUZ	Boyce, J. M.	HQ-EL	Lin, D. N.	NAGW 590	2015
32	UNIV OF CHICAGO	Bindschadler, R. A.	GSFC	MacAyeal, D. R.	NAG 5-394	2542
32	UNIV OF CHICAGO	Browne, I. D.	JSC	Anders, E.	NAG 9-52	2550
32	UNIV OF CHICAGO	Browne, I. D.	JSC	Grossman, L.	NAG 9-54	2551
32	UNIV OF CHICAGO	Phinney, W. C.	JSC	Richter, F. M.	NAG 9-67	2552
32	UNIV OF CHICAGO	Quaide, W. L.	HQ-EL	Turkevich, A.	NAGW 423	2556
32	UNIV OF CHICAGO	Quaide, W. L.	HQ-EL	Economou, T. E.	NAGW 655	2560
32	UNIV OF CHICAGO	Quaide, W. L.	HQ-EL	Turkevich, A. L.	NAGW 741	2562
32	UNIV OF CHICAGO	Quaide, W. L.	HQ-EL	Schramm, D. N.	NSG 7212	2591
32	UNIV COLORADO-BOLDR	Gaydos, L.	ARC	Walker, D. A.	NCA 2-170303	2186
32	UNIV COLORADO-BOLDR	Mead, G. D.	GSFC	Wyss, M.	NAG 5-453	2131
32	UNIV COLORADO-BOLDR	Mead, G. D.	GSFC	Wahr, J.	NAG 5-485	2132
32	UNIV COLORADO-BOLDR	Mead, G. D.	GSFC	Ashby, N.	NAG 5-497	2133
32	UNIV COLORADO-BOLDR	Welker, J. E.	GSFC	Yuen, D. A.	NAG 5-574	2135
32	UNIV COLORADO-BOLDR	Mead, G. D.	GSFC	Wyss, M.	NAS 5-27236	2165
32	UNIV COLORADO-BOLDR	Mead, G. D.	GSFC	Morgan, W. J.	NAS 5-27644	2167
32	UNIV COLORADO-BOLDR	Kouns, C. W.	GSFC	Unavailable	NAS 5-27671	2168
32	UNIV COLORADO-BOLDR	Kouns, C. W.	GSFC	Unavailable	NAS 5-28617	2172
32	UNIV COLORADO-BOLDR	Lyons, L. R.	MSFC	Dusenbery, P. B.	NAS 8-35920	2178
32	UNIV COLORADO-BOLDR	Scott, D. H.	HQ-EL	Esposito, L. W.	NAGW 769	2156
32	UNIV COLORADO-BOLDR	Scott, D. H.	HQ-EL	Jakosky, B.	NAGW 771	2157
32	UNIV OF FLORIDA	Phinney, W. C.	JSC	Mueller, P. A.	NAG 9-91	2360
32	UNIV OF HAWAII-MANOA	Evans, D. L.	HQ-EE	Singer, R. B.	NASW 4018	2495
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	McCord, T. B.	NAGW 37	2469
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Fanale, F. P.	NAGW 133	2470
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Morrison, D.	NAGW 136	2471
32	UNIV OF HAWAII-MANOA	Quaide, W. L.	HQ-EL	Fanale, F. P.	NAGW 171	2473
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Hawke, B. R.	NAGW 237	2474
32	UNIV OF HAWAII-MANOA	Williams, R. J.	HQ-EL	Fanale, F. P.	NAGW 348	2476
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Mark, P. M.	NAGW 437	2477
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Morrison, D.	NAGW 498	2478
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Walker, G. P.	NAGW 541	2479
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Fanale, F. P.	NAGW 583	2480
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	McCord, T. B.	NAGW 589	2481
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Fanale, F. P.	NAGW 633	2483
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Bell, J. F.	NAGW 712	2485
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Gradie, J. C.	NAGW 726	2487
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Hawke, B. R.	NASW 3566	2494
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	McCord, T. B.	NSG 7312	2502
32	UNIV OF HAWAII-MANOA	Boyce, J. M.	HQ-EL	Pilcher, C. B.	NSG 7403	2504
32	UNIV OF HAWAII-MANOA	Quaide, W. L.	HQ-EL	Gaffey, M. J.	NSG 7462	2505
32	UNIV OF HAWAII-MANOA	Owens, F. C.	HQ-LE	Sinton, J. M.	NGT 12-004-801	2501
32	UNIV HOUSTON-HOUSTON	Welker, J. E.	GSFC	Burke, K.	NAG 5-585	4687
32	UNIV HOUSTON-HOUSTON	Devincenzi, D. L.	HQ-EB	Oro, J.	NGR 44-005-002	4705
32	UNIV HOUSTON-HOUSTON	Boyce, J. M.	HQ-EL	King, E. A.	NAGW 169	4690
32	UNIV HOUSTON-HOUSTON	Quaide, W. L.	HQ-EL	King, E. A.	NAGW 178	4691
32	UNIV HOUSTON-HOUSTON	Boyce, J. M.	HQ-EL	Woronow, A.	NAGW 439	4692
32	UNIV HOUSTON-HOUSTON	Boyce, J. M.	HQ-EL	Smith, R.	NSG 7551	4716
32	UNIV ILLINOIS-CHICGO	Owens, F. C.	HQ-LE	Raup, D. M.	NGT 14-020-803	2598
32	UNIV ILLINOIS-URBANA	Oseroff, H.	GSFC	Iverson, L.	NAS 5-28781	2626
32	UNIV OF IOWA	Oseroff, H.	GSFC	Carmichael, R. S.	NAS 5-26425	2770
32	UNIV OF IOWA	Boyce, J. M.	HQ-EL	Christiansen, E. H.	NAGW 537	2763
32	UNIV MARYLAND-COL PK	Frey, H. V.	GSFC	Trasco, J. D.	NAG 5-245	2949
32	UNIV MARYLAND-COL PK	Middleton, E. M.	GSFC	Goward, S. N.	NCC 5-26	3013
32	UNIV MARYLAND-COL PK	Masuoka, E.	GSFC	Chang, C. C.	NSG 5423	3041
32	UNIV MARYLAND-COL PK	Boyce, J. M.	HQ-EL	McFadden, L. A.	NAGW 562	2984
32	UNIV OF MASS-AMHERST	Phinney, W. C.	JSC	McGill, G. E.	NAG 9-75	3286
32	UNIV OF MASS-AMHERST	Dietrich, J. W.	JSC	Rhodes, J. M.	NSG 9069	3298
32	UNIV OF MASS-AMHERST	De Vincenzi, D. L.	HQ-EB	Irvine, W. M.	NAGW 436	3289

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32	UNIV OF MASS-AMHERST	Boyce, J. M.	HQ-EL	Huguenin, R. L.	NAGW 570	3291
32	UNIV OF MASS-AMHERST	Boyce, J. M.	HQ-EL	McGill, G. E.	NGR 22-010-076	3294
32	UNIV OF MASS-AMHERST	Boyce, J.	HQ-EL	Huguenin, R. L.	NSG 7405	3297
32	UNIV OF MIAMI	Kouns, C. W.	GSFC	Harrison, C. G.	NAG 5-414	2386
32	UNIV OF MIAMI	Oseroff, H.	GSFC	Harrison, C. G.	NAS 5-28745	2391
32	UNIV MICH-ANN ARBOR	Devincenzi, D. L.	HQ-EB	Hayes, J. M.	NAGW 252	3388
32	U MINN-MNPLS-ST PAUL	Browne, I. D.	JSC	Pepin, R. O.	NAG 9-60	3450
32	U MINN-MNPLS-ST PAUL	Phinney, W. C.	JSC	Alexander, E. C., Jr.	NAG 9-66	3451
32	U MINN-MNPLS-ST PAUL	Williams, R. J.	HQ-EL	Alexander, E. C.	NAGW 485	3453
32	U MINN-MNPLS-ST PAUL	Owens, F. C.	HQ-LE	Alexander, E. C., Jr.	NGT 25-001-800	3466
32	UNIV MO-COLUMBIA	Rickman, D. L.	NSTL	Grant, S. K.	NAS13-251	3500
32	UNIV MO-COLUMBIA	Boyce, J. M.	HQ-EL	Whitford-stark H, J. L.	NAGW 170	3498
32	UNIV MO-ST LOUIS	Brinton, H. C.	HQ-EL	James, P. B.	NAGW 586	3515
32	UNIV MO-ST LOUIS	Brinton, H. C.	HQ-EL	James, P. B.	NAGW 742	3516
32	UNIV MO-ST LOUIS	Quaide, W. L.	HQ-EL	James, P. B.	NSG 7563	3517
32	UNIV OF NEVADA-RENO	Oseroff, H.	GSFC	Taranik, J. V.	NAS 5-28765	3570
32	UNIV OF NEW MEXICO	Browne, I. D.	JSC	Keil, K.	NAG 9-30	3682
32	UNIV OF NEW MEXICO	Scott, D. H.	HQ-EL	Elston, W. E.	NGR 32-004-062	3684
32	UNIV OF NEW MEXICO	Owens, F. C.	HQ-LE	Kleil, K.	NGT 32-004-771	3686
32	UNIV OF RHODE ISLAND	Boyce, J. M.	HQ-EL	Boothroyd, J. C.	NSG 7414	4491
32	UNIV OF SOUTHERN CAL	Quaide, W. L.	HQ-EL	Sammis, C. G.	NAGW 43	2071
32	UNIV OF SOUTHERN CAL	Quaide, W. L.	HQ-EL	Dabrowski, A. J.	NSG 7535	2081
32	UNIV TENNESSEE-KNOXV	Browne, I. D.	JSC	McSween, H. Y.	NAG 9-58	4533
32	UNIV TENNESSEE-KNOXV	Browne, I. D.	JSC	Taylor, L. A.	NAG 9-62	4534
32	UNIV TENNESSEE-KNOXV	Phinney, W. C.	JSC	Taylor, L. A.	NAG 9-73	4535
32	UNIV TENNESSEE-KNOXV	Owens, F. C.	HQ-LE	Taylor, L.	NGT 43-001-806	4549
32	UNIV TENNESSEE-KNOXV	Owens, F. C.	HQ-LB	Taylor, L. A.	NGT 43-001-805	4548
32	UNIV TEXAS-AUSTIN	Welker, J. E.	GSFC	Schutz, B.	NAG 5-528	4741
32	UNIV TEXAS-AUSTIN	Mead, G.	GSFC	Shelus, P. J.	NAS 5-27235	4751
32	UNIV TEXAS-AUSTIN	Kolenkiewicz, R.	GSFC	Tapley, B. D.	NAS 5-27344	4752
32	UNIV TEXAS-AUSTIN	Boyce, J. M.	HQ-EL	Smoluchowski, R.	NSG 7505	4778
32	UNIV TEXAS-DALLAS	McKay, D. S.	JSC	Carter, J. L.	NAG 9-99	4788
32	UNIV OF TOLEDO	Brinton, H. C.	HQ-EL	Delsemme, A. H.	NSG 7301	4276
32	UNIV OF UTAH	Lowman, P. D., Jr.	GSFC	Smith, R. B.	NAG 5-164	4832
32	UNIV OF UTAH	Oseroff, H.	GSFC	Currey, D. R.	NAS 5-28753	4835
32	UNIV OF UTAH	Owens, F. C.	HQ-LB	McCoy, R. M.	NGT 45-003-802	4840
32	UNIV OF VIRGINIA	Scott, D. H.	HQ-EL	Johnson, R. E.	NAGW 186	5007
32	UNIV OF VIRGINIA	Boyce, J. M.	HQ-EL	Howard, A. D.	NSG 7572	5022
32	UNIV OF WASHINGTON	Phinney, W. C.	JSC	McCallum, I. S.	NAG 9-84	5124
32	UNIV OF WASHINGTON	Horz, F.	JSC	Brownlee, D. E.	NAG 9-124	5125
32	UNIV OF WASHINGTON	Tuyahov, A. J.	HQ-EE	Adams, J. B.	NAGW 85	5127
32	UNIV OF WASHINGTON	Evans, D.	HQ-EE	Adams, J. B.	NASW 4016	5150
32	UNIV OF WASHINGTON	Scott, D. H.	HQ-EL	Holsapple, K. A.	NAGW 328	5131
32	UNIV OF WASHINGTON	Boyce, J. M.	HQ-EL	Adams, J. B.	NSG 7173	5158
32	UNIV OF WASHINGTON	Quaide, W. L.	HQ-EL	McCallum, I. S.	NSG 7313	5159
32	UNIV WISC-MADISON	Peterson, D. L.	ARC	Aber, J. D.	NCA 2-28	5232
32	UNIV OF WYOMING	Boyce, J. M.	HQ-EL	Johnson, P. E.	NAGW 602	5256
32	UTAH STATE UNIV	Knott, W. M.	KSC	Salisbury, F. B.	NAG10-14	4851
32	VA MILITARY INST	Boyce, J. M.	HQ-EL	Schreiber, H. D.	NSG 7355	5032
32	VIRGINIA POLY INST	Phinney, W. C.	JSC	Eriksson, K. A.	NAG 9-95	5080
32	WASHINGTON UNIVERSTY	Dietrich, J. W.	JSC	Walker, R. M.	NAG 9-55	3524
32	WASHINGTON UNIVERSTY	Browne, I. D.	JSC	Haskin, L. A.	NAG 9-56	3525
32	WASHINGTON UNIVERSTY	Phinney, W. C.	JSC	Dymek, R. F.	NAG 9-98	3526
32	WASHINGTON UNIVERSTY	Rosendhal, J. D.	HQ-E	Smith, W. H.	NAGW 418	3531
32	WASHINGTON UNIVERSTY	Quaide, W. L.	HQ-EL	Haskin, L. A.	NAGW 179	3529
32	WASHINGTON UNIVERSTY	Boyce, J. M.	HQ-EL	McKinnon, W. B.	NAGW 432	3533
32	WASHINGTON UNIVERSTY	Quaide, W. L.	HQ-EL	Walker, R. M.	NAGW 608	3535
32	WASHINGTON UNIVERSTY	Boyce, J. M.	HQ-EL	Arvidson, R. E.	NSG 7087	3545
32	WASHINGTON UNIVERSTY	Boyce, J. M.	HQ-EL	Arvidson, R. E.	NSG 7545	3547
32	WESLEYAN UNIVERSITY	Boyce, J. M.	HQ-EL	Patton, P. C.	NAGW 244	2227

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
32	WHITTIER COLLEGE	Boyce, J. M.	HQ-EL	Rossbacher, R. A.	NAGW 517	2082
32	WOODSHOLE OCEAN INST	Taylor, P. T.	GSFC	Heirtzler, J. R.	NAG 5-466	3305
32	WOODSHOLE OCEAN INST	Taylor, P. T.	GSFC	Heirtzler, J. R.	NAG 5-517	3306
32	WOODSHOLE OCEAN INST	Welker, J. E.	GSFC	Bowin, O. C.	NAG 5-593	3307
32	WOODSHOLE OCEAN INST	Kouns, C. W.	GSFC	Shure, L.	NAG 5-595	3308
32	WOODSHOLE OCEAN INST	Mead, G. D.	GSFC	Bowin, C. O.	NAS 5-27991	3313
32	WOODSHOLE OCEAN INST	Phinney, W. C.	JSC	Kurz, M. D.	NAG 9-69	3309
32	YALE UNIVERSITY	Boyce, J. M.	HQ-EL	Longhi, J.	NAGW 175	2231
33	JOHNS HOPKINS UNIV	Patzert, W. C.	HQ-EE	Gray, E. P.	NAGW 574	2905
33	CASE WESTERN RESERVE	Powell, J. A.	LERC	Fung, C. D.	NAG 3-301	4052
33	CITY U N Y-GRAD SCHL	Patzert, W. C.	HQ-EE	Pierson, W. J.	NAGW 266	3700
33	COLUMBIA UNIVERSITY	Patzert, W. C.	HQ-EE	Cane, M. A.	NAGW 582	3732
33	COLUMBIA UNIVERSITY	Hampson, R. F.	HQ-EE	Broecker, W. S.	NAGW 704	3735
33	FLORIDA STATE UNIV	Christensen, E. M.	GSFC	O'brien, J.	NAG 5-219	2335
33	FLORIDA STATE UNIV	Thomas, R. H.	HQ-EE	O'brien, J. J.	NGT 10-004-800	2339
33	HAMPTON INSTITUTE	Esaias, W. E.	HQ-EE	Venable, D. D.	NAGW 407	4910
33	HOFSTRA UNIVERSITY	Patzert, W. C.	HQ-EE	Weissman, D. E.	NAGW 468	3818
33	MASS INST OF TECH	Kirk, R. G.	GSFC	Wunsch, C.	NAG 5-307	3163
33	MASS INST OF TECH	Kirk, R. G.	GSFC	Harrison, D. E.	NAG 5-322	3164
33	MASS INST OF TECH	Kirk, R. G.	GSFC	Wunsch, C.	NAG 5-534	3174
33	MASS INST OF TECH	McClain, C. R.	GSFC	Rizzoli, P. M.	NAG 5-583	3176
33	MASS INST OF TECH	Esaias, W. E.	HQ-EE	Rizzoli, P.	NAGW 677	3200
33	NO CAROLINA STATE U	Huang, N. E.	GSFC	Tung, C. C.	NAS 6-3018	4000
33	NO CAROLINA STATE U	Esaias, W. E.	HQ-EE	Kamykowski, D.	NAGW 367	3997
33	NOVA UNIVERSITY	Kirk, R. G.	GSFC	Witte, J. M.	NAS 5-26714	2342
33	NOVA UNIVERSITY	Kirk, R. G.	GSFC	Witte, J. M.	NAS 5-28567	2343
33	OREGON STATE UNIV	Patzert, W. C.	HQ-EE	Chelton, D. B.	NAGW 730	4309
33	STANFORD UNIVERSITY	Patzert, W. C.	HQ-EE	Peterson, A. M.	NAGW 361	1528
33	STANFORD UNIVERSITY	Thomas, R. H.	HQ-EE	Vesecky, J.	NAGW 628	1536
33	TEXAS A&M UNIVERSITY	Szajna, E. F.	GSFC	El-sayed, S. Z.	NAS 5-22966	4641
33	UNIV ALASKA-FAIRBNKS	Oseroff, H.	GSFC	Royer, T. C.	NAS 5-28762	1120
33	UNIV CALIF-DAVIS	Rao, D. B.	GSFC	Powell, T.	NAG 5-217	1758
33	UNIV CALIF-SAN DIEGO	McClain, C. R.	GSFC	Austin, R. W.	NAG 5-587	1898
33	UNIV CALIF-SAN DIEGO	Esaias, W. E.	HQ-EE	Eppley, R. W.	NAGW 458	1914
33	UNIV CALIF-SAN DIEGO	Patzert, W. C.	HQ-EE	Tai, C. K.	NAGW 663	1919
33	UNIV CALIF-SAN DIEGO	Patzert, W. C.	HQ-EE	Luther, D. S.	NAGW 664	1920
33	UNIV CALIF-SAN DIEGO	Esaias, W. E.	HQ-EE	Davis, R. E.	NAGW 683	1921
33	UNIV CALIF-SAN DIEGO	Patzert, W. C.	HQ-EE	Davis, R. E.	NASW 3669	1941
33	UNIV CALIF-S BARBARA	Esaias, W. E.	HQ-EE	Smith, R. C.	NAGW 290	1991
33	UNIV OF CHICAGO	Davis, C. O.	HQ-EE	Alberte, R. S.	NAGW 460	2557
33	UNIV COLORADO-BOLDR	Thomas, R. H.	HQ-EE	Barry, R. G.	NAGW 363	2146
33	UNIV COLORADO-BOLDR	Thomas, R. H.	HQ-EE	Barry, R. G.	NAGW 641	2152
33	UNIV OF HAWAII-MANOA	Patzert, W. C.	HQ-EE	McCord, T. B.	NAGW 318	2475
33	UNIV OF MASS-AMHERST	Patzert, W. C.	HQ-EE	McIntosh, R. E.	NAGW 276	3287
33	UNIV OF MASS-AMHERST	McGoldrick, L. F.	HQ-EE	Swift, C. T.	NAGW 287	3288
33	UNIV OF MASS-AMHERST	Thomas, R. H.	HQ-EE	Swift, C. T.	NAGW 559	3290
33	UNIV OF MIAMI	Davis, C. O.	HQ-EE	Gordan, H. R.	NAGW 273	2387
33	UNIV NEW HAMP-DURHAM	Patzert, W. C.	HQ-EE	Pettigrew, N. R.	NAGW 271	3586
33	UNIV OF SO FLORIDA	Esaias, W. E.	HQ-EE	Carder, K. L.	NAGW 465	2397
33	UNIV OF SO FLORIDA	Davis, C. A.	HQ-EE	Carder, K. L.	NAGW 678	2398
33	UNIV OF SOUTHERN CAL	Esaias, W. E.	HQ-EE	Kiefer, D. A.	NAGW 317	2075
33	UNIV OF SOUTHERN CAL	Esaias, W. E.	HQ-EE	Pieper, R. E.	NAGW 335	2076
33	UNIV OF WASHINGTON	Patzert, W. C.	HQ-EE	Brown, R. A.	NAGW 303	5130
33	UNIV OF WASHINGTON	Thomas, R. H.	HQ-EE	Rothrock, D. A.	NAGW 412	5132
33	UNIV OF WASHINGTON	Patzert, W. C.	HQ-EE	Brown, R. A.	NAGW 679	5136
33	UNIV OF WASHINGTON	Thomas, R. H.	HQ-EE	Martin, S.	NAGW 700	5137
33	UNIV OF WASHINGTON	Patzert, W. C.	HQ-EE	Katsaros, K. B.	NAGW 739	5140
33	UNIV OF WASHINGTON	Carder, K. L.	HQ-EE	Untersteiner, N.	NASW 3647	5148
33	UNIV WISC-MILWAUKEE	Rao, D. B.	GSFC	Mortimer, C. H.	NAG 5-209	5244
33	WOODSHOLE OCEAN INST	Kirk, R. G.	GSFC	Chase, R. P.	NAG 5-281	3304

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33	WOODSHOLE OCEAN INST	Patzert, W. C.	HQ-EE	Joyce, T. M.	NAGW 272	3310
33	WOODSHOLE OCEAN INST	Thomas, R. H.	HQ-EE	Hollister, C. D.	NGT 22-014-800	3315
39	AUBURN UNIV-AUBURN	Tuyahov, A. J.	HQ-EE	Hajek, B. F.	NAGW 758	1016
39	COLUMBIA UNIVERSITY	Travis, L. P.	GSFC	Zobler, L.	NCC 5-32	3751
39	COLUMBIA UNIVERSITY	Mooneyhan, D. W.	NSTL	Levenson, R. A.	NAS13-243	3742
39	GEORGIA INST OF TECH	Hurley, E. J.	GSFC	Cunnold, D. M.	NAS 5-25817	2437
39	GEORGIA INST OF TECH	Downs, S. W., Jr.	MSFC	Shackelford, R. G.	NAS 8-32397	2443
39	HOWARD UNIVERSITY	Hall, D. K.	GSFC	Day, B.	NAG 5-224	2300
39	HUNTER COLLEGE	Tuyahov, A. J.	HQ-EE	Strahler, A. H.	NAGW 735	3820
39	KANSAS STATE UNIV	Hall, F. G.	JSC	Kanemasu, E. T.	NAS 9-16457	2786
39	LA ST U&A&M COL-BRGE	Williams, M.	GSFC	Hill, J. M.	NAS 5-28096	2857
39	LA ST U&A&M COL-BRGE	Oseroff, H.	GSFC	Bauman, R. H.	NAS 5-28756	2858
39	MICHIGAN STATE UNIV	Tuyahov, A. J.	HQ-EE	Enslin, W. R.	NGL 23-004-083	3336
39	MISSISSIPPI STATE U	Vitale, J. A.	HQ-ET	Miller, W. F.	NGL 25-001-054	3483
39	NEW MEX ST U-LAS CR	Nitschke, H. A.	JSC	Blevins, B.	NAS 9-95519	3677
39	NEW MEX ST U-LAS CR	Lapoint, D. A.	JSC	Waterman, A.	NAS 9-95557	3678
39	OLD DOMINION UNIV	Wallio, H. A.	LARC	Tiwari, S. N.	NAG 1-456	4940
39	OLD DOMINION UNIV	Hypes, W. D.	LARC	Kindle, E. C.	NCC 1-34	4958
39	OREGON STATE UNIV	Luvall, J.	NSTL	Schrumpf, B. J.	NAS13-268	4311
39	OREGON STATE UNIV	Tuyahov, A. J.	HQ-EL	Schrumpf, B. J.	NGL 38-002-053	4314
39	PAN AMERICAN UNIV	Browne, I. D.	JSC	Lemaster, E. W.	NAG 9-61	4577
39	PENN STATE U-UNIV PK	Schmugge, T. J.	GSFC	Carlson, T. N.	NAG 5-184	4378
39	PURDUE UNIVERSITY	Browne, I. D.	JSC	Daughtry, C.	NAS 9-16528	2702
39	PURDUE UNIVERSITY	Tuyahov, A. J.	HQ-	Daughtry, C. S.	NAGW 799	2696
39	PURDUE UNIVERSITY	Owens, F. C.	HQ-LE	Mitchell, C. A.	NGT 15-004-800	2713
39	RICE UNIVERSITY	Butler, D. M.	HQ-EE	Michel, F. C.	NAGW 482	4593
39	SAN FRAN STATE UNIV	Kasting, J. F.	ARC	Wharton, R. A.	NCA 2-2	1435
39	SO DAKOTA STATE UNIV	Oseroff, H.	GSFC	Lewis, J. K.	NAS 5-28766	4509
39	STANFORD UNIVERSITY	Likens, W. C.	ARC	Lyon, R. J.	NCA 2-745413	1596
39	STANFORD UNIVERSITY	Connell, T.	GSFC	Inan, U.	NCA 5-102	1603
39	STATE UNIV NY-ALBANY	Keller, V. W.	MSFC	Laza, G. G.	NAS 8-32893	3881
39	ST U NY-UPST MED CTR	Oseroff, H.	GSFC	Duggin, M. J.	NAS 5-27595	3940
39	TEXAS A&M UNIVERSITY	Blanchard, D.	JSC	Randall, J. D.	NAS 9-14828	4652
39	TEXAS A&M UNIVERSITY	Browne, I. D.	JSC	Guseman, L. F., Jr.	NAS 9-16664	4654
39	TEXAS A&M UNIVERSITY	Actkinson, A. L.	JSC	Sielken, R. L., Jr.	NAS 9-16785	4655
39	UNIV ALA-HUNTSVILLE	Roberts, W. T.	MSFC	Wu, S. T.	NAG 8-488	1062
39	UNIV OF ARIZONA	Wrigley, R. C.	ARC	Schowengerdt, R. A.	NCC 2-234	1279
39	UNIV OF ARIZONA	Tuyahov, A. J.	HQ-EE	Hutchinson, C.	NAGW 670	1245
39	UNIV CALIF-DAVIS	Fitzjarrald, D. E.	MSFC	Carroll, J. J.	NAS 8-36550	1762
39	UNIV CALIF-L ANGELES	Peterson, D. L.	ARC	Rundel, P. W.	NCA 2-390402	1852
39	UNIV CALIF-L ANGELES	Butler, D. M.	HQ-EE	Abdulla, M. A.	NAGW 78	1826
39	UNIV CALIF-L ANGELES	Lynch, J. T.	HQ-EE	Coleman, P. J., Jr.	NGL 05-007-004	1860
39	UNIV CALIF-SAN DIEGO	Phinney, W. C.	JSC	MacDougal, J. D.	NAG 9-65	1905
39	UNIV CALIF-S BARBARA	Ackerman, T.	ARC	Estes, J. E.	NCA 2-3	1999
39	UNIV CALIF-S BARBARA	Hall, F. G.	GSFC	Botkin, D. B.	NAG 5-548	1987
39	UNIV CALIF-S BARBARA	Oseroff, H.	GSFC	Dozier, J.	NAS 5-27463	1996
39	UNIV CALIF-S BARBARA	Oseroff, H.	GSFC	Estes, J. E.	NAS 5-28697	1997
39	UNIV CALIF-S BARBARA	Oseroff, H.	GSFC	Dozier, J.	NAS 5-28770	1998
39	UNIV CALIF-S BARBARA	Browne, I. D.	JSC	Botkin, D. B.	NAG 9-64	1988
39	UNIV CALIF-S BARBARA	Browne, I. D.	JSC	Estes, J. E.	NCC 9-11	2003
39	UNIV CALIF-S BARBARA	Browne, I. D.	JSC	Botkin, D. B.	NCC 9-13	2004
39	UNIV CALIF-S BARBARA	Rambler, M. B.	HQ-EB	Kim, B.	NAGW 323	1992
39	UNIV CALIF-S BARBARA	Murphy, R. E.	HQ-EE	Simonett, D. S.	NAGW 788	1995
39	UNIV CALIF-S BARBARA	Tuyahov, A. J.	HQ-EL	Estes, J. E.	NAGW 455	1994
39	UNIV CALIF-S BARBARA	Owens, F. C.	HQ-LB	Dozier, J.	NGT 05-010-801	2006
39	UNIV OF CENTRAL FLA	Knott, W. M.	KSC	Madsen, B. C.	NAS10-10390	2350
39	UNIV COLORADO-BOLDR	Costes, N. C.	MSFC	Sture, S.	NAS 8-35668	2176
39	UNIV OF DELAWARE	Oseroff, H.	GSFC	Klemas, V.	NAS 5-27580	2249
39	UNIV OF DELAWARE	Bartlett, D. S.	LARC	Klemas, V.	NCC 1-81	2250
39	UNIV OF DENVER	Seals, R. K., Jr.	LARC	Murcay, D. G.	NSG 1432	2211

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39	UNIV DIST COLUMBIA	Ruitberg, A.	GSFC	Lessin, I.	NGR 09-053-003	2315
39	UNIV OF FLORIDA	Howard, R. M.	KSC	Farber, E. A.	NAS10-11230	2374
39	UNIV OF FLORIDA	Uyahov, J. T.	HQ-EL	Ruth, B. E.	NSG 7236	2383
39	UNIV HOUSTON-CL LAKE	Browne, I. D.	JSC	Hallum, C. R.	NAS 9-17117	4719
39	UNIV OF IDAHO	Lawless, J. G.	ARC	Brockway, C. E.	NCA 2-25	2509
39	UNIV ILLINOIS-URBANA	Lin, F. N.	KSC	Chao, B. T.	NAS10-11153	2630
39	UNIV OF KANSAS	Schmugge, T. J.	GSFC	Ulaby, F. T.	NAG 5-30	2798
39	UNIV OF KANSAS	Browne, I. D.	JSC	Ulaby, F. T.	NCC 9-7	2820
39	UNIV OF KANSAS	Tuyahov, A. J.	HQ-EL	Martinko, E. A.	NGL 17-004-024	2821
39	UNIV OF KENTUCKY	Vento, D. M.	LERC	Altenkirch, R. A.	NAG 3-258	2838
39	UNIV MARYLAND-COL PK	Qurney, R.	GSFC	Ragan, R.	NAG 5-395	2957
39	UNIV MARYLAND-COL PK	Walter, L. S.	GSFC	Ragan, R.	NAS 5-28732	3002
39	UNIV MARYLAND-COL PK	Butler, D. M.	HQ-EE	Papadopoulos, K.	NAGW 81	2978
39	UNIV MARYLAND-COL PK	Tuyahov, A. J.	HQ-ET	Ragan, R. M.	NAGW 33	2977
39	UNIV MICH-ANN ARBOR	Miller, E. R.	MSFC	Carignan, G. R.	NAS 8-32661	3410
39	UNIV MICH-ANN ARBOR	Tuyahov, A. J.	HQ-EE	Fawwaz, F. T.	NAGW 733	3393
39	U MINN-MNPLS-ST PAUL	Oseroff, H.	GSFC	Glaser, P. H.	NAS 5-28740	3461
39	UNIV MO-COLUMBIA	Tuyahov, A. J.	HQ-EL	McFarland, W. D.	NAGW 46	3497
39	UNIV OF MONTANA	Peterson, D. L.	ARC	Running, S.	NCA 2-26	3552
39	UNIV OF MONTANA	Peterson, D. L.	ARC	Running, S. W.	NCA 2-27	3553
39	UNIV OF MONTANA	Peterson, D. L.	ARC	Running, S.	NCA 2-475301	3554
39	UNIV NEBRASKA-LINCLN	Browne, I. D.	JSC	Blad, B. L.	NAS 9-16636	3563
39	UNIV NEBRASKA-LINCLN	Tuyahov, A. J.	HQ-EL	Carlson, M. P.	NGL 28-004-020	3564
39	UNIV N CAR-CHPL HILL	Harriss, R. C.	LARC	Martens, C. S.	NAG 1-181	4013
39	UNIV N CAR-CHPL HILL	Rambler, M. B.	HQ-EB	Martens, C. S.	NAGW 593	4016
39	UNIV N CAR-CHPL HILL	Owens, F. C.	HQ-LB	Martens, C. S.	NGT 34-003-800	4017
39	UNIV OKLAHOMA-NORMAN	Gerlich, J. C.	GSFC	Sasaki, Y. K.	NCC 5-600	4297
39	UNIV OF PENNSYLVANIA	Knott, W. M.	KSC	Brown, A.	NAG10-21	4432
39	U PUERTO RICO-RIO PI	Oseroff, H.	GSFC	Waide, R. B.	NAS 5-28746	5263
39	UNIV OF RHODE ISLAND	Blodget, H. W.	GSFC	West, N.	NAS 5-27559	4490
39	UNIV SO CAROLINA-COL	Oseroff, H.	GSFC	Kjerfve, B.	NAS 5-28741	4501
39	UNIV SO CAROLINA-COL	Vitale, J. A.	HQ-ET	Roberson, R. E.	NSG 7504	4503
39	UNIV TEXAS-AUSTIN	Crews, J. L.	JSC	Kyriakides, S.	NAS 9-17085	4759
39	UNIV TEXAS-AUSTIN	Stencel, R. E.	HQ-EZ	Shields, G.	NSG 7232	4776
39	UNIV OF UTAH	Tuyahov, A. J.	HQ-EL	Wright, P. M.	NAGW 95	4834
39	U VERMONT & ST AGR C	Tuyahov, A. J.	HQ-EL	Whitmore, R. A.	NSG 7453	4862
39	UNIV WISC-MADISON	Owens, F. C.	HQ-LE	Herman, G. F.	NGT 50-002-802	5241
39	UNIV WISC-MADISON	Owens, F. C.	HQ-LB	Giese, R. L.	NGT 50-002-801	5240
39	UNIV WISC-MILWAUKEE	Lawless, J. G.	ARC	Nealson, K. H.	NCC 2-369	5246
39	UTAH STATE UNIV	Butler, D. M.	HQ-EE	Schunk, R. W.	NAGW 77	4845
39	WASHINGTON ST UNIV	Oseroff, H.	GSFC	Frazier, B. E.	NAS 5-28758	5162
39	WASHINGTON UNIVERSTY	Knott, W. M.	KSC	Packard, B.	NAG10-22	3537
39	WASHINGTON UNIVERSTY	Kaluzienski, L. J.	HQ-EZ	Katz, J.	NAGW 592	3534
41	ALABAMA A&M UNIV	Randall, J. L.	MSFC	Shipman, J. R.	NAG 8-42	1006
41	AMERICAN UNIVERSITY	Fries, S.	HQ-LB	McCurdy, H. E.	NASW 4067	2251
41	ARIZONA STATE UNIV	Maddalon, D. V.	LARC	Saric, W. S.	NAG 1-598	1129
41	ARIZONA STATE UNIV	Peterson, J. B., Jr.	LARC	Saric, W. S.	NCC 1-89	1165
41	ARIZONA STATE UNIV	Holdeman, J. D.	LERC	So, R. M.	NAG 3-260	1135
41	ARIZONA STATE UNIV	Hippensteele, C. A.	LERC	Florschuetz, L. W.	NSG 3075	1175
41	ATLANTA UNIVERSITY	Desmarais, R. N.	LARC	Bharucha-reid, A. T.	NAG 1-413	2404
41	BOSTON UNIVERSITY	Yates, E. C., Jr.	LARC	Freedman, M. I.	NAG 1-276	3047
41	BOSTON UNIVERSITY	Yates, E. C., Jr.	LARC	Bharadvaj, B. K.	NAG 1-564	3048
41	BOSTON UNIVERSITY	Yates, E. C.	LARC	Morino, L.	NGT 22-004-800	3062
41	BOSTON UNIVERSITY	Owens, F. C.	HQ-LB	Tseng, K.	NGT 22-008-804	3064
41	BOSTON UNIVERSITY	Owens, F. C.	HQ-LB	Tseng, K.	NGT 22-008-805	3065
41	BROWN UNIVERSITY	Townsend, J. C.	LARC	Sirovich, L.	NSG 1617	4484
41	CALIF INST OF TECH	Peake, D. J.	ARC	Culick, F. E.	NAG 2-194	1314
41	CALIF INST OF TECH	Schiff, L. B.	ARC	Culick, F. E.	NCC 2-309	1363
41	CALIF INST OF TECH	Starns, J. H., Jr.	LARC	Knauss, W. G.	NSG 1483	1376
41	CALIF INST OF TECH	Chai, A. T.	LERC	Coles, D.	NAG 3-466	1317

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41	CALIF INST OF TECH	Holt, S. S.	HQ-MF	Ahrens, T. J.	NASW 3752	1359
41	CAL POLY ST U-POMONA	Christianson, R. S.	ARC	Lord, P. A.	NAG 2-49	1381
41	CAL POLY ST U-S LUIS	Talbot, P. D.	ARC	Sandlin, D. R.	NAG 2-61	1383
41	CAL POLY ST U-S LUIS	Magee, J. P.	ARC	Grimes, J. E.	NAS 2-10364	1384
41	CAL POLY ST U-S LUIS	Carter, A.	ARC	Nelson, L. H.	NCA 2-6	1385
41	CAL POLY ST U-S LUIS	Corsiglia, V. R.	ARC	Sandlin, D. R.	NCC 2-226	1386
41	CAL POLY ST U-S LUIS	Wilson, S. B.	ARC	Sandlin, D. R.	NCC 2-236	1387
41	CAL POLY ST U-S LUIS	Koenig, D. G.	ARC	Sandlin, D. R.	NCC 2-255	1388
41	CAL POLY ST U-S LUIS	Snyder, W. J.	ARC	Sandlin, D. R.	NCC 2-258	1389
41	CAL POLY ST U-S LUIS	Schroers, L. G.	ARC	Sandlin, D. R.	NCC 2-259	1390
41	CAL POLY ST U-S LUIS	Falarski, M. D.	ARC	Sandlin, D. R.	NCC 2-278	1391
41	CAL POLY ST U-S LUIS	Berry, D. T.	ARC	Sandlin, D. R.	NCC 2-338	1392
41	CAL POLY ST U-S LUIS	Koenig, D. G.	ARC	Hoffmann, J. A.	NSG 2391	1393
41	CAL STATE U-LG BEACH	Peterson, V. L.	ARC	Cabeci, T.	NAG 2-287	1400
41	CAL STATE U-LG BEACH	Shaw, R. J.	LERC	Cebeci, T.	NAG 3-601	1402
41	CAL STATE U-NRTHRDGE	Shih, K. C.	ARC	Hriber, E. J.	NCA 2-554301	1407
41	CASE WESTERN RESERVE	Hingst, W. R.	LERC	Caughey, D. A.	NAG 3-61	4034
41	CASE WESTERN RESERVE	Hingst, W. R.	LERC	Greber, I.	NAG 3-102	4036
41	CASE WESTERN RESERVE	Holdeman, J. D.	LERC	Greber, I.	NAG 3-251	4045
41	CASE WESTERN RESERVE	Sockol, P. M.	LERC	Reshotko, E.	NAG 3-270	4047
41	CASE WESTERN RESERVE	Kielb, R. E.	LERC	Adams, M. L.	NAG 3-331	4054
41	CASE WESTERN RESERVE	Stubbs, R. M.	LERC	Lavery, J. E.	NAG 3-482	4075
41	CASE WESTERN RESERVE	Hingst, W. R.	LERC	Greber, I.	NAG 3-520	4081
41	CASE WESTERN RESERVE	Sockol, P. M.	LERC	Reshotko, E.	NAG 3-554	4083
41	CASE WESTERN RESERVE	Strazisar, A.	LERC	Prahl, J. M.	NAG 3-572	4088
41	CASE WESTERN RESERVE	Sockol, P. M.	LERC	Lavery, J.	NAG 3-625	4091
41	CASE WESTERN RESERVE	Bober, L. J.	LERC	Ramachandra, S. M.	NAG 3-648	4093
41	CASE WESTERN RESERVE	Delaat, J. C.	LERC	Buchner, M.	NAG 3-659	4095
41	CASE WESTERN RESERVE	Owens, F. C.	HQ-LE	Tien, J. S.	NGT 36-027-805	4113
41	CITY COLLEGE OF N Y	Bushnell, D. M.	LARC	Johnson, J. A., III	NAG 1-377	3692
41	CITY COLLEGE OF N Y	Boldman, D. R.	LERC	Raj, R.	NAG 3-122	3694
41	CLARKSON UNIVERSITY	Chapman, G.	ARC	Lin, S. P.	NCC 2-280	3710
41	CLEMSON UNIV-CLEMSON	Steinke, R. J.	LERC	Yang, T.	NAG 3-538	4494
41	CLEVELAND STATE UNIV	Johnson, G. M.	LERC	Chang, S. H.	NAG 3-339	4126
41	CLEVELAND STATE UNIV	Snyder, A.	LERC	Ghorashi, A.	NAG 3-483	4130
41	CLEVELAND STATE UNIV	Rice, E. J.	LERC	Gorla, R. S.	NAG 3-548	4133
41	CLEVELAND STATE UNIV	Chamis, C. C.	LERC	Bellini, P.	NAG 3-550	4134
41	CLEVELAND STATE UNIV	Chamis, C. C.	LERC	Bellini, P. X.	NAG 3-644	4136
41	COLLEGE OF WM & MARY	Edwards, J. W.	LARC	Runyan, H. L.	NAG 1-422	4873
41	COLLEGE OF WM & MARY	Thomson, R. G.	LARC	Kruszewski, E. T.	NAG 1-557	4879
41	COLLEGE OF WM & MARY	Adcock, J. B.	LARC	Kemp, W. B., Jr.	NCC 1-69	4887
41	COLORADO STATE UNIV	Sockol, P. M.	LERC	Sadeh, W. Z.	NAG 3-539	2088
41	COLUMBIA UNIVERSITY	Harris, J. E.	LARC	Eiseman, P. R.	NAG 1-355	3714
41	COLUMBIA UNIVERSITY	Erlebacher, G.	LARC	Eiseman, P. R.	NAG 1-479	3716
41	COLUMBIA UNIVERSITY	Mixson, J. S.	LARC	Vaicaitis, R.	NAG 1-541	3717
41	COLUMBIA UNIVERSITY	Harris, R. L., Sr.	LARC	Galanter, E.	NCC 1-5	3745
41	COLUMBIA UNIVERSITY	Mixson, J. S.	LARC	Vaicaitis, R.	NSG 1450	3753
41	CORNELL UNIVERSITY	Tauber, M. E.	ARC	Caughey, D. A.	NAG 2-13	3758
41	CORNELL UNIVERSITY	Tauber, M. E.	ARC	Caughey, D. A.	NAG 2-218	3761
41	CORNELL UNIVERSITY	Farassat, F.	LARC	George, A. R.	NAG 1-376	3756
41	CORNELL UNIVERSITY	Farassat, F.	LARC	George, A. R.	NAG 1-590	3757
41	CORNELL UNIVERSITY	Swisshelm, J. M.	LERC	Caughey, D. A.	NAG 3-19	3764
41	CORNELL UNIVERSITY	Chima, R. V.	LERC	Caughey, D. A.	NAG 3-45	3765
41	CORNELL UNIVERSITY	Newman, F. A.	LERC	Moore, F. K.	NAG 3-349	3766
41	CORNELL UNIVERSITY	Chima, R. V.	LERC	Caughey, D. A.	NAG 3-645	3770
41	DREXEL UNIVERSITY	Price, D. B.	LARC	Calise, A. J.	NAG 1-243	4339
41	EMBRY-RIDDLE AERO U	Bergeron, H. P.	LARC	Lohr, G. W.	NCC 1-66	2317
41	FLORIDA ATLANTIC U	Bousman, W. G.	ARC	Gaonkar, G. H.	NCC 2-361	2326
41	FLORIDA STATE UNIV	Koenig, D. G.	ARC	Krothapalli, A.	NAG 2-300	2331
41	FLORIDA STATE UNIV	Smith, C. A.	ARC	Krothapalli, A.	NAG 2-314	2332

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
41	FLORIDA STATE UNIV	Seiner, J. M.	LARC	Tam, C. K.	NAG 1-421	2328
41	FLORIDA STATE UNIV	Stone, J. R.	LERC	Tam, C. K.	NAG 3-182	2334
41	GEORGE WASHINGTON U	Beach, H. L.	LARC	Liebowitz, H.	NAG 1-136	2261
41	GEORGE WASHINGTON U	Newsom, J. R.	LARC	Liebowitz, H.	NAG 1-199	2265
41	GEORGE WASHINGTON U	Swanson, R. C.	LARC	Liebowitz, H.	NAG 1-573	2268
41	GEORGE WASHINGTON U	Duberg, J. E.	LARC	Liebowitz, H.	NAS 1-14605	2273
41	GEORGE WASHINGTON U	Morgan, H. G.	LARC	Liebowitz, H.	NCC 1-14	2277
41	GEORGE WASHINGTON U	Foughner, J. T., Jr.	LARC	Liebowitz, H.	NCC 1-24	2279
41	GEORGE WASHINGTON U	Suit, W. T.	LARC	Liebowitz, H.	NCC 1-29	2280
41	GEORGE WASHINGTON U	Massenberg, S. E.	LARC	Shinar, J.	NCC 1-44	2282
41	GEORGE WASHINGTON U	Massenberg, S. E.	LARC	Liebowitz, H.	NCC 1-47	2283
41	GEORGE WASHINGTON U	McComb, H. G.	LARC	Liebowitz, H.	NGR 09-010-078	2285
41	GEORGE WASHINGTON U	Morgan, H. G.	LARC	Liebowitz, H.	NGR 09-010-085	2286
41	GEORGE WASHINGTON U	Gertsma, L. W.	LERC	Garris, C. A.	NAG 3-641	2269
41	GEORGIA INST OF TECH	Hodges, D. H.	ARC	Rehfield, L. W.	NAG 2-238	2420
41	GEORGIA INST OF TECH	Dod, L. R.	GSFC	Gagliano, J. A.	NAS 5-28724	2441
41	GEORGIA INST OF TECH	Nixon, M. W.	LARC	Rehfield, L. W.	NAG 1-398	2412
41	GEORGIA INST OF TECH	Chamis, C. C.	LERC	Atluri, S. N.	NAG 3-346	2422
41	GEORGIA INST OF TECH	Chamis, C. C.	LERC	Simitzes, G. J.	NAG 3-534	2425
41	HAMPTON INSTITUTE	Heath, R. A.	LARC	Bowman, W.	NCA 1-63	4911
41	HARVEY MUDD COLLEGE	Gupta, K. K.	ARC	Tanenbaum, B. S.	NAG 2-240	1411
41	HARVEY MUDD COLLEGE	Clary, G. R.	ARC	Phillips, J. R.	NCA 2-283201	1413
41	HARVEY MUDD COLLEGE	Gupta, K. K.	ARC	Tanenbaum, B. S.	NCA 2-283501	1420
41	HARVEY MUDD COLLEGE	Gupta, K. K.	ARC	Tanenbaum, B. S.	NCC 2-314	1421
41	HARVEY MUDD COLLEGE	Gupta, K. K.	ARC	Tanenbaum, B. S.	NCC 2-343	1422
41	HARVEY MUDD COLLEGE	Gupta, K. K.	DFRF	Tanenbaum, B. S.	NCA 2-283402	1417
41	ILL INST OF TECH	Hefner, J. N.	LARC	Nagib, H. M.	NSG 1591	2517
41	ILL INST OF TECH	Chamis, C. C.	LERC	Daniel, I. M.	NAG 3-423	2514
41	ILL INST OF TECH	Groeneweg, J. F.	LERC	Nagib, H. N.	NAG 3-565	2515
41	IMPERIAL C SCI & TEC	Peake, D. J.	ARC	Bradshaw, P.	NAGW 581	5272
41	IND U-PURDUE-INDAPLS	Kao, H. C.	LERC	Bodonyi, R. J.	NAG 3-528	2653
41	IOWA STATE UNIV	Olson, L. E.	ARC	James, W. D.	NAG 2-30	2730
41	IOWA STATE UNIV	Murphy, J. D.	ARC	Pletcher, R. H.	NAG 2-152	2732
41	IOWA STATE UNIV	Marvin, J. G.	ARC	Tannehill, J. C.	NAG 2-245	2733
41	IOWA STATE UNIV	Chaussee, D. S.	ARC	Tannehill, J. C.	NCA 2-340301	2744
41	IOWA STATE UNIV	Chaussee, D. S.	ARC	Tannehill, J. C.	NCA 2-340501	2745
41	IOWA STATE UNIV	Olson, L. E.	ARC	Vogel, J. M.	NCC 2-19	2746
41	IOWA STATE UNIV	Murphy, J. D.	ARC	Cook, W. J.	NCC 2-200	2748
41	IOWA STATE UNIV	Malcolm, G. N.	ARC	James, W. D.	NSG 2091	2750
41	IOWA STATE UNIV	Strazisar, A. J.	LERC	Okiishi, T. H.	NAG 3-356	2734
41	IOWA STATE UNIV	Sandercock, D. M.	LERC	Serovy, G. K.	NAG 3-521	2735
41	ISRAEL INST OF TECH	Schiff, L. B.	ARC	Dogani, D.	NAGW 609	5279
41	ISRAEL INST OF TECH	Ardema, M. D.	ARC	Shinar, J.	NCCW 4	5280
41	LEHIGH UNIVERSITY	Yu, J. C.	LARC	Rockwell, D. O.	NAG 1-461	4355
41	MASS INST OF TECH	Hicks, R. M.	ARC	Murman, E. M.	NAG 2-105	3122
41	MASS INST OF TECH	Smith, C. A.	ARC	Hubbard, J. E., Jr.	NAG 2-182	3125
41	MASS INST OF TECH	Tobias, L.	ARC	Simpson, R. W.	NAG 2-190	3126
41	MASS INST OF TECH	Johnson, W. R.	ARC	Widnall, S. E.	NAG 2-251	3131
41	MASS INST OF TECH	Johnson, W. R.	ARC	Miller, R. H.	NAG 2-275	3133
41	MASS INST OF TECH	Johnson, W. R.	ARC	Ham, N. D.	NCC 2-366	3244
41	MASS INST OF TECH	Johnson, W. R.	ARC	Widnall, S. E.	NSG 2142	3262
41	MASS INST OF TECH	Johnson, W. R.	ARC	Ham, N. D.	NSG 2266	3263
41	MASS INST OF TECH	Harris, J. W.	JSC	Oman, C. M.	NAS 9-17371	3238
41	MASS INST OF TECH	Montgomery, R. C.	LARC	Vandervelde, W. E.	NAG 1-126	3109
41	MASS INST OF TECH	Kilgore, R. A.	LARC	Covert, E. E.	NAG 1-206	3111
41	MASS INST OF TECH	Beach, H. L., Jr.	LARC	Murman, E. M.	NAG 1-229	3112
41	MASS INST OF TECH	Melson, N. D.	LARC	Murman, E. M.	NAG 1-358	3113
41	MASS INST OF TECH	Hinton, D. A.	LARC	Simpson, R. W.	NAG 1-472	3114
41	MASS INST OF TECH	Howell, W. E.	LARC	Simpson, R. W.	NAG 1-497	3116
41	MASS INST OF TECH	Dwoyer, D. L.	LARC	Murman, E. M.	NAG 1-507	3117



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41	MASS INST OF TECH	Dunham, R. E., Jr.	LARC	Hansman, R. J., Jr.	NAG 1-568	3118
41	MASS INST OF TECH	Hood, R. V.	LARC	Simpson, R. W.	NGL 22-009-640	3250
41	MASS INST OF TECH	Chima, R. V.	LERC	Thompkins, W. T., Jr.	NAG 3-9	3136
41	MASS INST OF TECH	Bond, T. H.	LERC	Heywood, J. B.	NAG 3-82	3138
41	MASS INST OF TECH	Kielb, R. E.	LERC	Crawley, E. F.	NAG 3-200	3140
41	MASS INST OF TECH	Chamis, C. C.	LERC	Mandell, J. F.	NAG 3-377	3147
41	MASS INST OF TECH	Spera, D. A.	LERC	Harris, W. L.	NAG 3-378	3148
41	MASS INST OF TECH	Lehtinen, B.	LERC	Epstein, A. H.	NAG 3-636	3155
41	MASS INST OF TECH	Strazisar, A. J.	LERC	Cleaver, T. G.	NGL 22-009-383	3248
41	MASS INST OF TECH	Hoyniak, D.	LERC	Crawley, E. F.	NSG 3079	3266
41	MASS INST OF TECH	Newman, F. A.	LERC	Greitzer, E. M.	NSG 3208	3267
41	MASS INST OF TECH	Bardos, R.	HQ-MO	Mar, S. W.	NASW 3904	3241
41	MASS INST OF TECH	Graves, R. A., Jr.	HQ-RT	Murman, E. M.	NGT 22-009-901	3257
41	MICHIGAN STATE UNIV	Hefner, J. N.	LARC	Falco, R. E.	NAG 1-302	3317
41	MICHIGAN STATE UNIV	Yu, J. C.	LARC	Foss, J. F.	NAG 1-367	3318
41	MICHIGAN STATE UNIV	Maestrello, L.	LARC	Yen, D.	NCC 1-101	3334
41	MICHIGAN STATE UNIV	Durbin, P.	LERC	Foss, J.	NAG 3-574	3326
41	MICHIGAN TECH UNIV	Thompson, R. L.	LERC	Arbabi, F.	NAG 3-504	3344
41	MISSISSIPPI STATE U	Chapman, G. T.	ARC	Koenig, K.	NCA 2-52	3482
41	MISSISSIPPI STATE U	Thames, F. C.	LARC	Whitfield, D. L.	NAG 1-226	3474
41	MISSISSIPPI STATE U	Waggoner, E. G.	LARC	Koenig, K.	NAG 1-362	3475
41	NEW MEX ST U-LAS CR	West, W. W.	GSFC	Lane, K.	NAS 5-28928	3675
41	NEW YORK UNIVERSITY	Chang, I. C.	ARC	Garabedian, P. R.	NAG 2-345	3826
41	NEW YORK UNIVERSITY	Maestrello, L.	LARC	Ting, L.	NAG 1-314	3824
41	NEW YORK UNIVERSITY	Thames, F. C.	LARC	Berger, M. J.	NAG 1-457	3825
41	NEW YORK UNIVERSITY	Liu, C. H.	LARC	Ting, L.	NCC 1-58	3835
41	NEW YORK UNIVERSITY	Graves, R. A., Jr.	HQ-RT	Garabedian, P. R.	NGT 33-016-800	3836
41	NO CAR A&T STATE U	Weinstein, L. M.	ARC	Klett, D. E.	NAG 1-406	3970
41	NO CAROLINA STATE U	Harris, J. E.	LARC	Hassan, H. A.	NAG 1-244	3983
41	NO CAROLINA STATE U	Anders, J. B.	LARC	Nagel, R. T.	NAG 1-424	3986
41	NO CAROLINA STATE U	Ricketts, R. H.	LARC	Turner, C. D.	NAS 1-17229	3998
41	NO CAROLINA STATE U	Salas, M. D.	LARC	Hassan, H. A.	NCC 1-22	4001
41	NO CAROLINA STATE U	Schooneover, W. E., Jr.	LARC	Dejarnette, F. R.	NCC 1-46	4002
41	NO CAROLINA STATE U	Erickson, W. D.	LARC	Hassan, H. A.	NCC 1-84	4003
41	NO CAROLINA STATE U	Gloss, B. B.	LARC	Dejarnette, F. R.	NCC 1-98	4004
41	NO CAROLINA STATE U	Zoby, E. V.	LARC	Dejarnette, F. R.	NCC 1-100	4005
41	NO CAROLINA STATE U	Johns, A. L.	LERC	Boles, M. A.	NAG 3-608	3993
41	NO CAROLINA STATE U	Owens, F. C.	HQ-LE	Hassan, H. A.	NGT 34-002-801	4008
41	NO CAROLINA STATE U	Owens, F. C.	HQ-LB	Hassan, H. A.	NGT 34-002-800	4007
41	NO CAROLINA STATE U	Owens, F. C.	HQ-LB	Dejarnette, F.	NGT 34-003-803	4009
41	NORTHWESTERN UNIV	Chamis, C. C.	LERC	Belytschko, T.	NAG 3-535	2523
41	NORTHWESTERN UNIV	Baumeister, K. J.	LERC	Taflove, A.	NAG 3-635	2524
41	OHIO STATE UNIV	Hicks, R. M.	ARC	Lee, J.	NAG 2-281	4162
41	OHIO STATE UNIV	Hicks, R. M.	ARC	Lee, J. D.	NAG 2-299	4163
41	OHIO STATE UNIV	Hicks, R. M.	ARC	Gregorek, G. M.	NAG 2-354	4164
41	OHIO STATE UNIV	Holmes, B. J.	LARC	Bragg, M. B.	NAG 1-342	4160
41	OHIO STATE UNIV	Shaw, R. J.	LERC	Gregorek, G. M.	NAG 3-28	4165
41	OHIO STATE UNIV	Shaw, R. J.	LERC	Lee, J. D.	NAG 3-374	4168
41	OHIO STATE UNIV	Brown, G. V.	LERC	Leissa, A. W.	NAG 3-424	4169
41	OHIO UNIVERSITY	Edwards, F. G.	ARC	McFarland, R. H.	NAG 2-231	4194
41	OKLAHOMA STATE UNIV	Holdeman, J. D.	LERC	Lilley, D. G.	NAG 3-549	4280
41	OLD DOMINION UNIV	Walsh, M. J.	LARC	Ash, R. L.	NAG 1-121	4919
41	OLD DOMINION UNIV	Mineck, R. E.	LARC	Goglia, G. L.	NAG 1-334	4927
41	OLD DOMINION UNIV	Dagenhart, J. R.	LARC	Verma, A. K.	NAG 1-340	4929
41	OLD DOMINION UNIV	Zoby, E. V.	LARC	Goglia, G. L.	NAG 1-346	4930
41	OLD DOMINION UNIV	Dagenhart, J. R.	LARC	Goglia, G. L.	NAG 1-353	4932
41	OLD DOMINION UNIV	Massenberg, S. E.	LARC	Tiwari, S. N.	NAG 1-363	4933
41	OLD DOMINION UNIV	Kumar, A.	LARC	Tiwari, S. N.	NAG 1-423	4935
41	OLD DOMINION UNIV	Anders, J. B.	LARC	Ash, R. L.	NAG 1-530	4945
41	OLD DOMINION UNIV	Dagenhart, J. R.	LARC	Lakin, W. D.	NAG 1-576	4949

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41	OLD DOMINION UNIV	Yates, E. C.	LARC	Kandil, O. A.	NAG 1-591	4950
41	OLD DOMINION UNIV	Prior, E. J.	LARC	Unavailable	NAS 1-17099	4954
41	OLD DOMINION UNIV	Prior, E. J.	LARC	Unavailable	NAS 1-17993	4955
41	OLD DOMINION UNIV	Davis, R. C.	LARC	Prabhakaran, R.	NCC 1-60	4960
41	OLD DOMINION UNIV	Liu, C. H.	LARC	Tiwari, S. N.	NCC 1-65	4961
41	OLD DOMINION UNIV	Smith, R. E., Jr.	LARC	Tiwari, S. N.	NCC 1-68	4962
41	OLD DOMINION UNIV	Massenberg, S. E.	LARC	Roberts, A. S., Jr.	NGR 47-003-052	4968
41	OLD DOMINION UNIV	Yates, E. C., Jr.	LARC	Kandil, O. A.	NSG 1560	4976
41	OLD DOMINION UNIV	Luckring, J. M.	LARC	Chaturvedi, S. K.	NSG 1561	4977
41	OLD DOMINION UNIV	Jones, R. L.	LARC	Mielke, R. R.	NSG 1650	4979
41	PEMBROKE STATE UNIV	Thurston, G. A.	LARC	Reissner, J. E.	NAG 1-428	4012
41	PENN STATE U-UNIV PK	McGary, M. C.	LARC	Maynard, J. D.	NAG 1-216	4369
41	PENN STATE U-UNIV PK	Povinelli, L. A.	LARC	Lakshminarayana, B.	NAG 3-555	4374
41	PENN STATE U-UNIV PK	Hingst, W. R.	LERC	Settles, G. S.	NAG 3-527	4373
41	PENN STATE U-UNIV PK	Sockol, P. M.	LERC	Lakshminarayana, B.	NSG 3212	4422
41	PENN STATE U-UNIV PK	Sanger, N. L.	LERC	Deutsch, S.	NSG 3264	4423
41	PENN STATE U-UNIV PK	Sockol, P. M.	LERC	Lakshminarayana, B.	NSG 3266	4424
41	PENN STATE U-UNIV PK	Owens, F. C.	HQ-LB	Petersen, G. W.	NGT 39-009-808	4421
41	PENN STATE U-UNIV PK	Graves, R. A., Jr.	HQ-RT	Lakshminarayana, B.	NGT 39-009-802	4416
41	POLY INST OF NY	Yu, Y. H.	ARC	Isom, M. P.	NCC 2-172	3844
41	PRINCETON UNIVERSITY	Hicks, R. M.	ARC	Jameson, A.	NAG 2-96	3611
41	PRINCETON UNIVERSITY	Horstman, C. C.	ARC	Holder, M.	NAG 2-109	3612
41	PRINCETON UNIVERSITY	Decker, W. A.	ARC	Curtiss, H. C.	NAG 2-244	3613
41	PRINCETON UNIVERSITY	Salas, M. D.	LARC	Jameson, A.	NAG 1-186	3607
41	PRINCETON UNIVERSITY	Zang, T. A.	LARC	Nosenchuck, D. M.	NAG 1-494	3608
41	PRINCETON UNIVERSITY	Bergeron, H. P.	LARC	Mulvey, J. M.	NAG 1-520	3609
41	PRINCETON UNIVERSITY	Blanchard, R. C.	LARC	Bienkowski, G. K.	NAS 1-17234	3632
41	PRINCETON UNIVERSITY	Hood, R. V.	LARC	Stengel, R. F.	NGL 31-001-252	3641
41	PRINCETON UNIVERSITY	Kielb, R. E.	LERC	Bendiksen, O. O.	NAG 3-308	3615
41	PRINCETON UNIVERSITY	Anderson, D. N.	LERC	Bracco, F. V.	NAG 3-353	3617
41	PRINCETON UNIVERSITY	Hicks, G.	HQ-RT	Bogdonoff, S.	NAGW 240	3626
41	PURDUE UNIVERSITY	Duke, E. L.	ARC	Schmidt, D. K.	NAG 2-228	2667
41	PURDUE UNIVERSITY	Berry, D. T.	ARC	Schmidt, D. K.	NAG 4-1	2687
41	PURDUE UNIVERSITY	Gera, J.	ARC	Andrisani, D.	NCA 2-7	2703
41	PURDUE UNIVERSITY	Goorjian, P.	ARC	Yang, H. T.	NCA 2-605201	2704
41	PURDUE UNIVERSITY	Franklin, J. A.	ARC	Schmidt, D. K.	NCC 2-243	2707
41	PURDUE UNIVERSITY	Duke, E. L.	ARC	Schmidt, D. K.	NCC 2-288	2709
41	PURDUE UNIVERSITY	Duke, E. L.	ARC	Dunipace, K. R.	NCC 2-289	2710
41	PURDUE UNIVERSITY	Lebacqz, J. V.	ARC	Andrisani, D., II	NCC 2-367	2712
41	PURDUE UNIVERSITY	Mixson, J. S.	LARC	Bernhard, R. J.	NAG 1-58	2654
41	PURDUE UNIVERSITY	Swanson, R. C.	LARC	McCarthy, D. R.	NAG 1-116	2655
41	PURDUE UNIVERSITY	Perry, B.	LARC	Weisshaar, T. A.	NAG 1-157	2656
41	PURDUE UNIVERSITY	Grantham, W. D.	LARC	Schmidt, D. K.	NAG 1-254	2659
41	PURDUE UNIVERSITY	Newsom, J. R.	LARC	Schmidt, D. K.	NAG 1-305	2660
41	PURDUE UNIVERSITY	Edwards, J. W.	LARC	Yang, H. T.	NAG 1-372	2662
41	PURDUE UNIVERSITY	Batina, J. T.	LARC	Williams, M. H.	NAG 1-502	2664
41	PURDUE UNIVERSITY	Steinke, R. J.	LERC	Murthy, S. N.	NAG 3-62	2670
41	PURDUE UNIVERSITY	Chamis, C. C.	LERC	Sun, C. T.	NAG 3-211	2671
41	PURDUE UNIVERSITY	Tacina, R. R.	LERC	Lefebvre, A. H.	NAG 3-226	2672
41	PURDUE UNIVERSITY	Hoyniak, D.	LERC	Fleeter, S.	NAG 3-412	2676
41	PURDUE UNIVERSITY	Steinke, R. J.	LERC	Murthy, S. N.	NAG 3-481	2678
41	PURDUE UNIVERSITY	Kaza, K. V.	LERC	Williams, M. H.	NAG 3-499	2680
41	PURDUE UNIVERSITY	Overbeke, T. V.	LERC	Murthy, S. N.	NAG 3-592	2684
41	PURDUE UNIVERSITY	Mitchell, G. A.	LERC	Sullivan, J. P.	NSG 3135	2714
41	PURDUE UNIVERSITY	Boldman, D. R.	LERC	Fleeter, S.	NSG 3285	2715
41	RENSSELAER POLY-NY	Maestrello, L.	LARC	Nagamatsu, H. T.	NAG 1-330	3849
41	RENSSELAER POLY-NY	Thompson, R. L.	LERC	Krempel, E.	NAG 3-262	3855
41	RENSSELAER POLY-NY	McCay, T. D.	MSFC	Myrabo, L. N.	NAG 8-28	3860
41	RENSSELAER POLY-NY	Greenfield, M. A.	HQ-RT	Loewy, R. G.	NGL 33-018-003	3865
41	RICE UNIVERSITY	Bowles, R. L.	LARC	Miele, A.	NAG 1-516	4581

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## APPENDIX - CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
41	RUTGERS ST U-N BRNSK	Tobak, M.	ARC	Zebib, A.	NCA 2-61	3654
41	SAN JOSE STATE UNIV	Davy, W. C.	ARC	Desautel, D.	NAG 2-363	1448
41	SAN JOSE STATE UNIV	Miura, H.	ARC	Wang, J. C.	NCA 2-675201	1451
41	SAN JOSE STATE UNIV	Miura, H.	ARC	Wang, J. C.	NCA 2-675306	1455
41	SAN JOSE STATE UNIV	Park, C.	ARC	Desautel, R.	NCA 2-675401	1456
41	SAN JOSE STATE UNIV	Jinkerson, J. H.	ARC	Wang, J. C.	NCC 2-83	1466
41	SAN JOSE STATE UNIV	Talbot, P. D.	ARC	Wang, J. C.	NCC 2-267	1480
41	STANFORD UNIVERSITY	Keener, E. R.	ARC	Roberts, L.	NAG 2-173	1495
41	STANFORD UNIVERSITY	Erzberger, H.	ARC	Bryson, A. E.	NAG 2-191	1496
41	STANFORD UNIVERSITY	Petersen, K. L.	ARC	Franklin, G. F.	NAG 2-223	1497
41	STANFORD UNIVERSITY	Deckert, W.	ARC	Karamcheti, K.	NAG 2-236	1498
41	STANFORD UNIVERSITY	Saito, J.	ARC	McCluskey, E. J.	NAG 2-246	1499
41	STANFORD UNIVERSITY	Hicks, R. M.	ARC	Roberts, L.	NAG 2-271	1502
41	STANFORD UNIVERSITY	Keener, E. R.	ARC	Roberts, L.	NAG 2-331	1505
41	STANFORD UNIVERSITY	Westphal, R. V.	ARC	Eaton, J. K.	NCA 2-18	1558
41	STANFORD UNIVERSITY	Lomax, H.	ARC	Dyke, M. V.	NCA 2-20	1559
41	STANFORD UNIVERSITY	Viegas, J. R.	ARC	MacCormack, R. W.	NCA 2-40	1562
41	STANFORD UNIVERSITY	Hung, C. M.	ARC	MacCormack, R. W.	NCA 2-43	1564
41	STANFORD UNIVERSITY	Lemke, L. G.	ARC	Powell, J. D.	NCA 2-54	1566
41	STANFORD UNIVERSITY	Warming, R. F.	ARC	Baganoff, D.	NCA 2-74	1570
41	STANFORD UNIVERSITY	Lomax, H.	ARC	Chapman, D.	NCA 2-745205	1571
41	STANFORD UNIVERSITY	Stevens, K. G.	ARC	Baganoff, D.	NCA 2-745302	1575
41	STANFORD UNIVERSITY	Lomax, H.	ARC	Hughes, T. J.	NCA 2-745307	1578
41	STANFORD UNIVERSITY	Kutler, P.	ARC	Cantwell, B. J.	NCA 2-745309	1579
41	STANFORD UNIVERSITY	Schmitz, F. H.	ARC	Debra, D.	NCA 2-745315	1583
41	STANFORD UNIVERSITY	Warming, R. F.	ARC	Baganoff, D.	NCA 2-745401	1584
41	STANFORD UNIVERSITY	Westphal, R. V.	ARC	Eaton, J. K.	NCA 2-745405	1588
41	STANFORD UNIVERSITY	Goebel, J. H.	ARC	Hesselink, L.	NCA 2-745411	1594
41	STANFORD UNIVERSITY	Moin, P.	ARC	Cantwell, B. J.	NCA 2-745502	1598
41	STANFORD UNIVERSITY	Leonard, A.	ARC	Ferziger, J. H.	NCC 2-15	1605
41	STANFORD UNIVERSITY	Deckert, W. H.	ARC	Roberts, L.	NCC 2-55	1608
41	STANFORD UNIVERSITY	Koenig, D. G.	ARC	Roberts, L.	NCC 2-74	1609
41	STANFORD UNIVERSITY	Lee, G.	ARC	Roberts, L.	NCC 2-77	1610
41	STANFORD UNIVERSITY	Lebacqz, J. V.	ARC	Bryson, A. E., Jr.	NCC 2-106	1611
41	STANFORD UNIVERSITY	Davis, S.	ARC	Roberts, L.	NCC 2-149	1614
41	STANFORD UNIVERSITY	Koenig, D. G.	ARC	Roberts, L. R.	NCC 2-150	1615
41	STANFORD UNIVERSITY	Yu, Y. H.	ARC	Hesselink, L.	NCC 2-188	1616
41	STANFORD UNIVERSITY	Soderman, P. T.	ARC	Karamcheti, K.	NCC 2-212	1617
41	STANFORD UNIVERSITY	Ardema, M.	ARC	Roberts, L.	NCC 2-247	1623
41	STANFORD UNIVERSITY	Bray, R. S.	ARC	Roberts, L.	NCC 2-270	1624
41	STANFORD UNIVERSITY	Cagliostro, D.	ARC	Springer, G. S.	NCC 2-291	1626
41	STANFORD UNIVERSITY	King, L. S.	ARC	Roberts, L.	NCC 2-294	1627
41	STANFORD UNIVERSITY	Schiff, L.	ARC	Roberts, L.	NCC 2-326	1633
41	STANFORD UNIVERSITY	Bencze, D. P.	ARC	Roberts, L.	NCC 2-341	1636
41	STANFORD UNIVERSITY	Gilyard, G. B.	DFRF	Debra, D. B.	NSG 4002	1656
41	STANFORD UNIVERSITY	Maddalon, D. V.	LARC	Johnston, J. P.	NAG 1-402	1491
41	STANFORD UNIVERSITY	Doggett, R. V., Jr.	LARC	Ashley, H.	NGL 05-020-243	1642
41	STANFORD UNIVERSITY	Bosque, M. A.	LERC	Hanson, R. K.	NAG 3-285	1512
41	STANFORD UNIVERSITY	Chamis, C. C.	LERC	Hughes, T. J.	NAG 3-319	1513
41	STANFORD UNIVERSITY	Owens, F. C.	HQ-LB	Bershader, D.	NGT 05-020-806	1652
41	STANFORD UNIVERSITY	Graves, R. A., Jr.	HQ-RT	Chapman, D. R.	NGT 05-020-801	1649
41	STATE UNIV NY-BUFFAL	Povinelli, L.	LERC	Rag, W.	NAG 3-469	3901
41	STATE UNIV NY-BUFFAL	Owens, F. C.	HQ-LB	George, W. K.	NGT 33-183-800	3906
41	ST U NY COL-ONEONTA	Harvey, W. D.	LARC	Ram, R. B.	NAG 1-131	3941
41	STATE U NY-STONY BRK	Owens, F. C.	HQ-LE	Inman, D. J.	NGT 33-183-804	3934
41	SYRACUSE UNIVERSITY	Peterson, R.	ARC	Murthy, V. R.	NAG 2-306	3944
41	SYRACUSE UNIVERSITY	Seiner, J. M.	LARC	Dosanjh, D.	NAG 1-129	3943
41	TENNESSEE STATE UNIV	Randall, J. I.	MSFC	Chadhuri, D. K.	NAG 8-22	4516
41	TEXAS A&M UNIVERSITY	Gambucci, B. J.	ARC	Brusse, J. C.	NAS 2-10272	4639
41	TEXAS A&M UNIVERSITY	Watts, M. E.	ARC	Miley, S.	NCA 2-773301	4664

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41	TEXAS A&M UNIVERSITY	Shockey, G. A.	ARC	Hall, G. F.	NCC 2-260	4665
41	TEXAS A&M UNIVERSITY	Feistel, T. W.	ARC	Chevalier, H. L.	NCC 2-368	4666
41	TEXAS A&M UNIVERSITY	Cooke, D. R.	JSC	Chevalier, H. L.	NAS 9-17164	4657
41	TEXAS A&M UNIVERSITY	Holmes, B. J.	LARC	Ward, D. T.	NAG 1-309	4620
41	TEXAS A&M UNIVERSITY	Stickle, J. W.	LARC	Ward, D. T.	NAG 1-344	4621
41	TEXAS A&M UNIVERSITY	Johnson, C. B.	LARC	MacHa, J. M.	NAG 1-417	4622
41	TEXAS A&M UNIVERSITY	Everhart, J. L.	LARC	Carlson, L. A.	NSG 1174	4672
41	TEXAS A&M UNIVERSITY	Shaw, R. J.	LERC	Korkan, K. D.	NAG 3-242	4626
41	TEXAS A&M UNIVERSITY	Hughes, C. E.	LERC	Korkan, K. D.	NAG 3-272	4627
41	TEXAS A&M UNIVERSITY	Dittmar, J. H.	LERC	Korkan, K. D.	NAG 3-354	4629
41	TEXAS A&M UNIVERSITY	Thompson, R.	LERC	Haisler, W. E.	NAG 3-491	4630
41	TEXAS A&M UNIVERSITY	Blaha, B. J.	LERC	Korkan, K. D.	NAG 3-626	4631
41	TEXAS A&M UNIVERSITY	Boyle, R. J.	LERC	Han, J. C.	NAS 3-24227	4640
41	TEXAS A&M UNIVERSITY	Owens, F. C.	HQ-LE	Kinra, V. K.	NGT 44-001-804	4671
41	TUSKEGEE INSTITUTE	Zilliac, G. G.	ARC	Jenkins, R. M.	NCC 2-353	1044
41	TUSKEGEE INSTITUTE	Steinle, F. W.	ARC	Harris, V. G.	NCC 2-358	1045
41	TUSKEGEE INSTITUTE	Povinelli, L. A.	LERC	Jenkins, R. M.	NAG 3-564	1035
41	TUSKEGEE INSTITUTE	Civinskas, K. C.	LERC	Jenkins, R. M.	NSG 3295	1047
41	TUSKEGEE INSTITUTE	Randall, J. L.	MSFC	Harris, V. G.	NAG 8-20	1036
41	UNIV OF AKRON	Chamis, C. C.	LERC	Fertis, D. G.	NAG 3-50	4200
41	UNIV OF AKRON	Chamis, C. C.	LERC	Chang, T. Y.	NAG 3-307	4205
41	UNIV OF AKRON	Gaunter, L. D.	LERC	Robinson, D. N.	NAG 3-379	4207
41	UNIV OF AKRON	Shaw, R. J.	LERC	Potapczuk, M. G.	NAG 3-416	4208
41	UNIV OF AKRON	Olsen, W.	LERC	Scavuzzo, R. J.	NAG 3-479	4209
41	UNIV OF AKRON	Roelke, R. J.	LERC	Drummond, J. E.	NAG 3-531	4212
41	UNIV OF AKRON	Chamis, C. C.	LERC	Padovan, J.	NAG 3-664	4213
41	UNIV ALA-HUNTSVILLE	Vann, W.	MSFC	Wessling, F.	NAG 8-553	1065
41	UNIV ALA-HUNTSVILLE	Houston, V. L.	MSFC	Wu, S. T.	NAS 8-36254	1094
41	UNIV OF ARIZONA	Pulliam, T. H.	ARC	Fung, K. Y.	NCA 2-36	1274
41	UNIV OF ARIZONA	Bach, R. E., Jr.	ARC	Parks, E. K.	NCA 2-40301	1275
41	UNIV OF ARIZONA	Wingrove, R. C.	ARC	Parks, E. K.	NCC 2-329	1280
41	UNIV OF ARIZONA	Groeneweg, J. F.	LERC	Kerschen, E. J.	NAG 3-357	1191
41	UNIV OF ARIZONA	Miles, J.	LERC	Peterson, R. A.	NAG 3-460	1193
41	UNIV OF ARIZONA	Stone, J. R.	LERC	Balsa, T. F.	NAG 3-485	1194
41	UNIV OF ARIZONA	Goorjian, P. M.	HQ-RT	Farley, D. T.	NGT 03-002-800	1287
41	UNIV CALIF-BERKELEY	Marvin, J. G.	ARC	Holt, M.	NCC 2-179	1729
41	UNIV CALIF-BERKELEY	Malcolm, G.	ARC	Holt, M.	NCC 2-334	1733
41	UNIV CALIF-BERKELEY	Cantwell, E. R.	ARC	Humphrey, J. A.	NCC 2-340	1734
41	UNIV CALIF-BERKELEY	Marek, C. J.	LERC	Oppenheim, A. K.	NAG 3-131	1667
41	UNIV CALIF-BERKELEY	Wang, C. R.	LERC	Humphrey, J. A.	NAG 3-624	1671
41	UNIV CALIF-BERKELEY	Owens, F. C.	HQ-LB	Phillips, T. G.	NGT 05-003-804	1747
41	UNIV CALIF-DAVIS	Nedell, B.	ARC	Hess, R. A.	NAG 2-221	1753
41	UNIV CALIF-DAVIS	Rubesin, M. W.	ARC	Kollmann, W.	NCC 2-186	1766
41	UNIV CALIF-DAVIS	Berry, D. T.	ARC	Hess, R. A.	NCC 2-241	1767
41	UNIV CALIF-DAVIS	Franklin, J. A.	ARC	Hess, R.	NCC 2-285	1770
41	UNIV CALIF-L ANGELES	Warmbrodt, W.	ARC	Friedmann, P. P.	NAG 2-209	1796
41	UNIV CALIF-L ANGELES	Miura, H.	ARC	Friedmann, P. P.	NAG 2-226	1798
41	UNIV CALIF-L ANGELES	Duke, E. L.	ARC	Vidal, J. J.	NAG 2-302	1799
41	UNIV CALIF-L ANGELES	Soderman, P.	ARC	Meecham, W. C.	NSG 2290	1868
41	UNIV CALIF-L ANGELES	Iliff, K. W.	DFRF	Balakrishnan, A. V.	NSG 4015	1869
41	UNIV CALIF-L ANGELES	Rudy, D. H.	LARC	Osher, S. J.	NAG 1-270	1791
41	UNIV CALIF-L ANGELES	Whitlow, W., Jr.	LARC	Osher, S. J.	NAG 1-273	1792
41	UNIV CALIF-L ANGELES	Whitlow, W., Jr.	LARC	Osher, S. J.	NAG 1-506	1794
41	UNIV CALIF-L ANGELES	Holdeman, J. D.	LERC	Karagozian, A. R.	NAG 3-543	1808
41	UNIV CALIF-S BARBARA	Sobieski, J.	LARC	Vanderplaats, G. N.	NAG 1-567	1982
41	UNIV CALIF-S CRUZ	Owens, F. C.	HQ-LB	Lin, D.	NGT 05-061-801	2026
41	UNIV OF CENTRAL FLA	Dunham, R. E.	LARC	Anderson, L. A.	NAG 1-518	2344
41	UNIV OF CINCINNATI	Erzberger, H.	ARC	Slater, G. L.	NAG 2-175	4219
41	UNIV OF CINCINNATI	Hodges, D. H.	ARC	Da Silva, M. C.	NAG 2-274	4220
41	UNIV OF CINCINNATI	Wilmoth, R. G.	LARC	Rubin, S. G.	NAG 1-8	4216

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41	UNIV OF CINCINNATI	Margason, R. J.	LARC	Ghia, K. N.	NAG 1-465	4217
41	UNIV OF CINCINNATI	Moss, J. N.	LARC	Davis, R. T.	NAG 1-548	4218
41	UNIV OF CINCINNATI	McLallin, K. L.	LERC	Tabakoff, W.	NAG 3-26	4221
41	UNIV OF CINCINNATI	Katsanis, T.	LERC	Hamed, A. A.	NAG 3-52	4222
41	UNIV OF CINCINNATI	Katsanis, T.	LERC	Ghia, K. N.	NAG 3-194	4223
41	UNIV OF CINCINNATI	Adamczyk, J. J.	LERC	Rubin, S. G.	NAG 3-397	4225
41	UNIV OF CINCINNATI	Thompson, R. L.	LERC	Stouffer, D. C.	NAG 3-511	4228
41	UNIV OF CINCINNATI	Coleman, A. D.	MSFC	Brown, D. L.	NAS 8-34503	4233
41	UNIV OF CINCINNATI	Graves, R. A., Jr.	HQ-RT	Rubin, S. G.	NGT 36-004-800	4237
41	UNIV COLORADO-BOLDR	Chapman, G. T.	ARC	Sather, D. P.	NAG 2-278	2115
41	UNIV COLORADO-BOLDR	Holst, T. L.	ARC	Chow, C. Y.	NCA 2-170202	2184
41	UNIV COLORADO-BOLDR	Kwak, D.	ARC	Chow, C. Y.	NCA 2-170302	2185
41	UNIV COLORADO-BOLDR	Holst, T. L.	ARC	Chow, C. Y.	NCC 2-355	2188
41	UNIV COLORADO-BOLDR	Esenwein, G.	HQ-EE	Unavailable	NASW 3800	2181
41	UNIV OF CONNECTICUT	Warmbrodt, W.	ARC	Bar-shalom, Y.	NAG 2-213	2216
41	UNIV OF CONNECTICUT	Warmbrodt, W.	ARC	Bar-shalom, Y.	NAG 2-318	2218
41	UNIV OF CONNECTICUT	Strazisar, A. J.	LERC	Bennett, J. C.	NAG 3-336	2221
41	UNIV OF CONNECTICUT	Roelke, R. J.	LERC	Bennett, J. C.	NAG 3-484	2223
41	UNIV OF CONNECTICUT	Thompson, R. L.	LERC	Jordan, E.	NAG 3-512	2224
41	UNIV OF DAYTON	Dunham, R. E., Jr.	LARC	Luers, J. K.	NAG 1-522	4242
41	UNIV OF DAYTON	Weinstein, L. M.	LARC	Grokay, M. C.	NAS 1-17522	4246
41	UNIV OF DAYTON	Shaw, R. J.	LERC	Luers, J. K.	NAG 3-65	4243
41	UNIV OF DAYTON	Stone, J. R.	LERC	Scott, J. N.	NAG 3-526	4245
41	UNIV OF DELAWARE	Dexter, H. B.	LARC	Pipes, R. B.	NAG 1-281	2242
41	UNIV OF FLORIDA	Chapman, G. T.	ARC	Clarkson, M. H.	NCA 2-42	2375
41	UNIV OF FLORIDA	Kroo, I. M.	ARC	Hajela, P.	NCA 2-240401	2377
41	UNIV OF FLORIDA	Aoyagi, K.	ARC	Fearn, R. L.	NSG 2288	2382
41	UNIV OF FLORIDA	Margason, R. J.	LARC	Fearn, R. L.	NAG 1-368	2355
41	UNIV OF FLORIDA	Perry, B.	LARC	Hajela, P.	NAG 1-579	2356
41	UNIV OF FLORIDA	Owens, F. C.	HQ-LE	Abbaschian, G. J.	NGT 10-005-805	2381
41	UNIV HOUSTON-HOUSTON	Maestrello, L.	LARC	Koopmann, G. H.	NAG 1-495	4681
41	UNIV HOUSTON-HOUSTON	Stone, J. R.	LERC	Hussain, A. K.	NAG 3-408	4683
41	UNIV HOUSTON-HOUSTON	Rice, E. J.	LERC	Hussain, A. K.	NAG 3-639	4686
41	UNIV ILLINOIS-URBANA	Duke, E. L.	ARC	Prussing, J. E.	NAG 2-347	2608
41	UNIV ILLINOIS-URBANA	Moin, P.	ARC	Adrian, R. J.	NCA 2-330401	2631
41	UNIV OF IOWA	Giles, G. L.	LARC	Haug, E. J.	NAG 1-215	2751
41	UNIV OF IOWA	Owens, F. C.	HQ-LE	Oberley, L. W.	NGT 16-003-800	2783
41	UNIV OF KANSAS	Fisher, D. F.	ARC	Lan, C. E.	NAG 2-371	2796
41	UNIV OF KANSAS	Stroub, R. H.	ARC	Fortin, P. E.	NCC 2-112	2811
41	UNIV OF KANSAS	Stroub, R. H.	ARC	Lan, C. E.	NCC 2-175	2812
41	UNIV OF KANSAS	Franklin, J. A.	ARC	Roskam, J.	NCC 2-242	2813
41	UNIV OF KANSAS	Kempel, R. W.	ARC	Downing, D. R.	NCC 2-293	2815
41	UNIV OF KANSAS	Gupta, K. K.	ARC	Fortin, P.	NCC 2-313	2816
41	UNIV OF KANSAS	Falarski, M. D.	ARC	Fortin, P. E.	NCC 2-320	2817
41	UNIV OF KANSAS	Stroub, R. H.	ARC	Fortin, P. E.	NCC 2-351	2818
41	UNIV OF KANSAS	Ayers, T. G.	ARC	Fortin, P. E.	NCC 4-3	2819
41	UNIV OF KANSAS	Burcham, F. W.	ARC	Roskam, J.	NSG 4028	2825
41	UNIV OF KANSAS	Brandon, J.	LARC	Lan, C. E.	NAG 1-134	2787
41	UNIV OF KANSAS	Henderson, W. P.	LARC	Lan, C. E.	NAG 1-308	2788
41	UNIV OF KANSAS	Bergeron, H. P.	LARC	Downing, D.	NAG 1-324	2789
41	UNIV OF KANSAS	Williams, L. J.	LARC	Roskan, J.	NAG 1-345	2790
41	UNIV OF KANSAS	Gainer, T. G.	LARC	Lan, C. E.	NAG 1-396	2791
41	UNIV OF KANSAS	Margason, R. J.	LARC	Lan, C. E.	NAG 1-455	2792
41	UNIV OF KANSAS	Bryant, W. H.	LARC	Downing, D. R.	NAG 1-490	2793
41	UNIV OF KANSAS	Paulson, J. W., Jr.	LARC	Lan, C. E.	NAG 1-616	2795
41	UNIV OF KANSAS	Powell, C. A.	LARC	Roskam, J.	NCC 1-6	2809
41	UNIV OF KANSAS	Bryant, W. H.	LARC	Downing, D. R.	NCC 1-79	2810
41	UNIV OF KANSAS	Gainer, T. G.	LARC	Lan, C. E.	NSG 1629	2823
41	UNIV OF KANSAS	Neumann, H. E.	LERC	Booth, F. W.	NAG 3-11	2797
41	UNIV OF KANSAS	Owens, F. C.	HQ-LB	Phillips, T. G.	NGT 07-002-800	2822

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41	UNIV OF MANCHESTER	Wang, C. R.	LERC	Lauder, B. E.	NAGW 779	5273
41	UNIV MARYLAND-COL PK	Mantay, W. R.	LARC	Chopra, I.	NAG 1-375	2932
41	UNIV MARYLAND-COL PK	Drummond, J. P.	LARC	Anderson, J. D.	NCC 1-41	3012
41	UNIV MARYLAND-COL PK	Margason, R. J.	LARC	Winkelmann, A. E.	NSG 1570	3037
41	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LE	Donaldson, B.	NGT 21-002-823	3036
41	UNIV OF MIAMI	Tobias, L.	ARC	Friedman, M. F.	NAG 2-298	2385
41	UNIV MICH-ANN ARBOR	Bullock, G. D.	GSFC	Hays, P. B.	NAS 5-25691	3403
41	UNIV MICH-ANN ARBOR	Tanner, J. A.	LARC	Clark, S. K.	NSG 1607	3424
41	UNIV MICH-ANN ARBOR	Steinmetz, B.	LERC	Kikuchi, N.	NAG 3-388	3364
41	UNIV MICH-ANN ARBOR	Owens, F. C.	HQ-LB	Shin, K. G.	NGT 23-005-801	3422
41	U MINN-MNPLS-ST PAUL	Adams, W. M., Jr.	LARC	Garrard, W. L.	NAG 1-217	3434
41	UNIV MO-COLUMBIA	Brown, J. L.	ARC	Miles, J. B.	NCC 2-199	3501
41	UNIV MO-COLUMBIA	Baker, W.	GSFC	Mudrick, S. E.	NAG 5-381	3496
41	UNIV MO-ROLLA	Holst, T. L.	ARC	Weintraub, D. J.	NCA 2-450201	3512
41	UNIV MO-ROLLA	Silcox, R. J.	LARC	Eversman, W.	NAG 1-198	3503
41	UNIV MO-ROLLA	Powell, C. A.	LARC	Koval, L. R.	NAG 1-240	3504
41	UNIV MO-ROLLA	Mayes, W. H.	LARC	Eversman, W.	NAG 1-394	3506
41	UNIV MO-ROLLA	Baumeister, K. J.	LERC	Eversman, W.	NAG 3-178	3508
41	UNIV NEBRASKA-LINCLN	Tacina, R. R.	LERC	Alexander, D. R.	NAG 3-634	3559
41	UNIV OF NEVADA-RENO	Steinle, F. W.	ARC	Rose, W. C.	NSG 2291	3576
41	UNIV NEW HAMP-DURHAM	Harvey, W. D.	LARC	Biringer, S.	NAG 1-462	3580
41	UNIV OF NOTRE DAME	Schiff, L. B.	ARC	Nelson, R. C.	NAG 2-258	2718
41	UNIV OF NOTRE DAME	Somers, D. M.	LARC	Mueller, T. J.	NSG 1419	2726
41	UNIV OF NOTRE DAME	Povinelli, L.	LERC	Cain, A. B.	NAG 3-545	2720
41	UNIV OF NOTRE DAME	Groeneweg, J. F.	LERC	Atassi, H.	NCC 3-48	2725
41	UNIV OF PACIFIC	Steinle, F. W., Jr.	ARC	Pejack, E. R.	NAG 2-192	2028
41	UNIV OF PACIFIC	Lee, G.	ARC	Perry, R. L.	NCC 2-298	2033
41	UNIV OF PACIFIC	Steinle, F. W.	ARC	Murthy, S. V.	NCC 2-357	2034
41	UNIV OF QUEENSLAND	Anderson, G. Y.	LARC	Stalker, R. J.	NAGW 499	5264
41	UNIV OF SANTA CLARA	Tobak, M.	ARC	Unal, A.	NCA 2-48	2045
41	UNIV OF SANTA CLARA	Davis, S. S.	ARC	Aggarwal, H. A.	NCC 2-191	2062
41	UNIV OF SANTA CLARA	Sandercock, D. M.	LERC	Roberts, W. B.	NAG 3-212	2044
41	UNIV OF SOUTHAMPTON	Ladson, C. L.	LARC	Goodyer, M. J.	NSG 7172	5276
41	UNIV OF SOUTHAMPTON	Boyden, R. P.	LARC	Goodyer, M. J.	NSG 7523	5277
41	UNIV OF SOUTHERN CAL	Yu, J. C.	LARC	Ho, C. M.	NAG 1-420	2064
41	UNIV OF SOUTHERN CAL	Bivins, R. G.	HQ-IU	Mixer, R.	NASW 3918	2077
41	UNIV STHN COLORADO	Corliss, L. D.	ARC	Dunn, W. R.	NCC 2-276	2213
41	UNIV STHN COLORADO	Criss, C.	ARC	Dunn, W. R.	NCC 2-277	2214
41	UNIV OF SYDNEY	Jones, J. J.	LARC	Bird, G. A.	NAGW 728	5266
41	UNIV TENNESSEE-KNOXV	Schairer, E. T.	ARC	Wu, J. M.	NAG 2-193	4524
41	UNIV TENNESSEE-KNOXV	Leonard, A.	ARC	Steinhoff, J.	NCA 2-772301	4545
41	UNIV TENNESSEE-KNOXV	Lawing, P. L.	LARC	Wu, J. M.	NAG 1-303	4519
41	UNIV TENNESSEE-KNOXV	Baumeister, K. J.	LERC	White, J. W.	NAG 3-18	4525
41	UNIV TENNESSEE-KNOXV	Shaw, R. J.	LERC	Keshock, E. G.	NAG 3-83	4526
41	UNIV TENNESSEE-KNOXV	Hingst, W. R.	LERC	Wu, J. M.	NAG 3-364	4528
41	UNIV TENNESSEE-KNOXV	Chang, S. C.	LERC	Steinberg, J. S.	NAG 3-398	4531
41	UNIV TENNESSEE-KNOXV	Gladden, H. J.	LERC	Crawford, R.	NAG 3-617	4532
41	UNIV TENNESSEE-KNOXV	Gladden, H. J.	LERC	Schulz, R.	NAS 3-23278	4537
41	UNIV TEXAS-AUSTIN	Lomax, H.	ARC	Dulikravich, G. S.	NCA 2-16	4763
41	UNIV TEXAS-AUSTIN	Marvin, J. G.	ARC	Bertin, J. J.	NCC 2-262	4767
41	UNIV TEXAS-AUSTIN	Goodrich, W. D.	JSC	Bertin, J. J.	NAS 9-13680	4757
41	UNIV TEXAS-AUSTIN	Gracey, C.	LARC	Speyer, J. L.	NAG 1-384	4728
41	UNIV TEXAS-AUSTIN	Allison, D. O.	LARC	Wilson, D. E.	NAG 1-556	4729
41	UNIV TEXAS-AUSTIN	Anders, J. B.	LARC	Panton, R. L.	NAG 1-610	4730
41	UNIV TEXAS-AUSTIN	Chamis, C. C.	LERC	Spanos, P. D.	NAG 3-210	4736
41	UNIV TEXAS-AUSTIN	Chamis, C. C.	LERC	Oden, J. T.	NAG 3-329	4737
41	UNIV TEXAS-DALLAS	Bullock, G. D.	GSFC	Hanson, W. B.	NAS 5-26071	4793
41	UNIV OF TOLEDO	Newsom, J. R.	LARC	Yedavalli, R. K.	NAG 1-578	4252
41	UNIV OF TOLEDO	Shaw, R. J.	LERC	Dewitt, K. J.	NAG 3-72	4254
41	UNIV OF TOLEDO	Hingst, W. R.	LERC	Keith, T. G., Jr.	NAG 3-309	4257

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41	UNIV OF TOLEDO	Brown, G. V.	LERC	Keith, T.	NAG 3-629	4265
41	UNIV OF TOLEDO	Brown, G. V.	LERC	Keith, T. G., Jr.	NSG 3139	4275
41	UNIV OF VIRGINIA	Northam, G. B.	LARC	McDaniel, J. C.	NAG 1-373	4989
41	UNIV OF VIRGINIA	Moss, J. N.	LARC	Fisher, S. S.	NAG 1-614	4994
41	UNIV OF VIRGINIA	Taylor, R. T.	LARC	Kugitman, A. R.	NAS 1-16286	5010
41	UNIV OF VIRGINIA	Owens, F. C.	HQ-LE	Matthews, G. B.	NGT 47-005-804	5021
41	UNIV OF VIRGINIA	Owens, F. C.	HQ-LB	Pilkey, W. D.	NGT 47-005-800	5018
41	UNIV OF WALES	Stroud, W. J.	LARC	Williams, F. W.	NCCW 2	5275
41	UNIV OF WASHINGTON	King, L. S.	ARC	Russell, D. A.	NAG 2-283	5105
41	UNIV OF WASHINGTON	Kutler, P.	ARC	Gessner, F. B.	NCA 2-850401	5151
41	UNIV OF WASHINGTON	Lee, G.	ARC	Childs, M. E.	NGR 48-002-141	5153
41	UNIV OF WASHINGTON	Putnam, L. E.	LARC	MacCormack, R. W.	NAS 1-17170	5144
41	UNIV OF WASHINGTON	Hingst, W. R.	LERC	Childs, M. E.	NAG 3-376	5108
41	UNIV OF WATERLOO	Tobak, M.	ARC	Hui, W. H.	NAGW 575	5270
41	UNIV OF WYOMING	Deaton, J. W.	LARC	Walrath, D. E.	NAG 1-272	5248
41	UNIV OF WYOMING	O'brien, T. K.	LARC	Odom, E. M.	NAG 1-351	5250
41	UTAH STATE UNIV	Minott, P.	GSFC	Wyatt, C.	NAS 5-28185	4853
41	VANDERBILT UNIVERSITY	Harvey, W. D.	LARC	Potter, J. L.	NAG 1-483	4551
41	VANDERBILT UNIVERSITY	Moss, J. N.	LARC	Potter, J. L.	NAG 1-549	4552
41	VIRGINIA COMWLTH U	Owens, F. C.	HQ-LB	Ottenbrite, R. M.	NGT 47-002-800	5030
41	VIRGINIA POLY INST	Aoyagi, K.	ARC	Schetz, J. A.	NAG 2-256	5066
41	VIRGINIA POLY INST	Marvin, J. G.	ARC	Pierce, F. J.	NSG 2301	5095
41	VIRGINIA POLY INST	Sobieski, J. E.	LARC	Hallauer, W. L.	NAG 1-145	5033
41	VIRGINIA POLY INST	Starnes, J. H., Jr.	LARC	Haftka, R. T.	NAG 1-168	5034
41	VIRGINIA POLY INST	Starnes, J. H., Jr.	LARC	Johnson, E. R.	NAG 1-201	5035
41	VIRGINIA POLY INST	Gracey, C.	LARC	Kelley, H. J.	NAG 1-203	5036
41	VIRGINIA POLY INST	Adelman, H. M.	LARC	Haftka, R. T.	NAG 1-224	5037
41	VIRGINIA POLY INST	Maddalon, D. V.	LARC	Saric, W. S.	NAG 1-280	5040
41	VIRGINIA POLY INST	Maddalon, D. V.	LARC	Saric, W. S.	NAG 1-299	5041
41	VIRGINIA POLY INST	Bradley, P. F.	LARC	Grossman, B.	NAG 1-337	5043
41	VIRGINIA POLY INST	Williams, J. G.	LARC	Post, D.	NAG 1-359	5045
41	VIRGINIA POLY INST	Shuart, M. J.	LARC	Jones, R. M.	NAG 1-389	5047
41	VIRGINIA POLY INST	Silcox, R. J.	LARC	Fuller, C. R.	NAG 1-390	5048
41	VIRGINIA POLY INST	Massenberg, S. E.	LARC	Nystrom, L. A.	NAG 1-393	5049
41	VIRGINIA POLY INST	Brooks, T. F.	LARC	Simpson, R. L.	NAG 1-446	5050
41	VIRGINIA POLY INST	Knight, N. F., Jr.	LARC	Reddy, J. N.	NAG 1-459	5051
41	VIRGINIA POLY INST	Williams, J. G.	LARC	Post, D.	NAG 1-481	5052
41	VIRGINIA POLY INST	Schoenster, J. A.	LARC	Wing-fai Ng	NAG 1-486	5054
41	VIRGINIA POLY INST	Parrish, R. V.	LARC	Snyder, H. L.	NAG 1-491	5055
41	VIRGINIA POLY INST	Dwoyer, D. L.	LARC	Grossman, B.	NAG 1-505	5057
41	VIRGINIA POLY INST	Starnes, J. H., Jr.	LARC	Johnson, E. R.	NAG 1-537	5059
41	VIRGINIA POLY INST	Starnes, J. H.	LARC	Gurdal, Z.	NAG 1-601	5063
41	VIRGINIA POLY INST	Adelman, H. M.	LARC	Haftka, R. T.	NAG 1-603	5064
41	VIRGINIA POLY INST	Prior, E. J.	LARC		NAS 1-18106	5083
41	VIRGINIA POLY INST	Barnwell, R. W.	LARC	Saric, W. S.	NCC 1-71	5085
41	VIRGINIA POLY INST	Chamis, C. C.	LERC	Reddy, J. N.	NAG 3-208	5068
41	VIRGINIA POLY INST	Kaza, K. V.	LERC	Haftka, R. T.	NAG 3-347	5072
41	VIRGINIA POLY INST	Wood, J. R.	LERC	Moore, J.	NAG 3-593	5077
41	VIRGINIA POLY INST	Flemings, D. P.	LERC	Mitchell, L. D.	NSG 3239	5096
41	VIRGINIA POLY INST	Owens, F. C.	HQ-LB	Telionis, D. P.	NGT 47-004-801	5087
41	VIRGINIA POLY INST	Owens, F. C.	HQ-LB	Marchman, J. F.	NGT 47-004-802	5088
41	VIRGINIA POLY INST	Owens, F. C.	HQ-LB	Schetz, J. A.	NGT 47-004-803	5089
41	VIRGINIA POLY INST	Owens, F. C.	HQ-LB	O'brien, W. F.	NGT 47-004-805	5091
41	VIRGINIA POLY INST	Owens, F. C.	HQ-LB	Hallauer, W. L.	NGT 47-004-809	5093
41	VIRGINIA POLY INST	Owens, F. C.	HQ-U	Mullins, R. T.	NGT 22-005-900	3301
41	WENTWORTH INST TECH	Coleman, A. M.	LARC	Peters, D. A.	NAG 1-250	3518
41	WASHINGTON UNIVERSITY	Mantay, W. R.	LARC	Hahn, H. T.	NAG 1-295	3519
41	WASHINGTON UNIVERSITY	Williams, J. G.	LARC	Chow, P.	NAG 1-460	3429
41	WAYNE STATE UNIV	Maestrello, L.	LARC	Chow, P.	NAG 1-460	3429
41	WEST VIRGINIA UNIV	Owens, F. C.	HQ-LE	Padhye, A. R.	NGT 49-001-802	5169
41	WESTERN MICHIGAN U	Kempel, R. W.	ARC	Alag, G. S.	NCC 2-362	3432

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41	WESTERN NEW ENG COL	Bishop, A. R.	LERC	Presz, W. M.	NAG 3-610	3302
41	WICHITA STATE UNIV	Holmes, B. J.	LARC	Wentz, W. H.	NAG 1-114	2826
41	WICHITA STATE UNIV	Holmes, B. J.	LARC	Wentz, W. H.	NAG 1-401	2827
41	WICHITA STATE UNIV	Koenig, R. W.	LARC	Paramasium, T.	NAG 1-452	2828
41	WICHITA STATE UNIV	Reinmann, J.	LERC	Zumwalt, G. W.	NAG 3-284	2829
41	WICHITA STATE UNIV	Shaw, R. J.	LERC	Zumwalt, G. W.	NAG 3-566	2830
41	WICHITA STATE UNIV	Svehla, R.	LERC	Zumwalt, G. W.	NAG 3-607	2831
41	WICHITA STATE UNIV	Savino, J. M.	LERC	Wentz, W. H., Jr.	NSG 3277	2833
41	YALE UNIVERSITY	Stencel, R. E.	HQ-EZ	Demarque, P.	NAGW 778	2234
42	AUBURN UNIV-AUBURN	Buchanan, H.	MSFC	Cochran, J. E.	NAS 8-36470	1026
42	CARNEGIE-MELLON UNIV	Horta, L. G.	LARC	Griffin, J. H.	NAG 1-612	4323
42	CITY COLLEGE OF N Y	Montgomery, R. C.	LARC	Thau, F. E.	NAG 1-6	3691
42	COLORADO STATE UNIV	Juang, J. N.	LARC	Dwyer, T. A.	NAG 1-436	2085
42	HOWARD UNIVERSITY	Alcorn, G. E.	GSFC	Chiang, B.	NAG 5-390	2302
42	MASS INST OF TECH	Hibbard, W. D.	GSFC	Bradt, H. V.	NAS 5-27575	3215
42	MASS INST OF TECH	Kostiuk, T.	GSFC	Spears, D.	NAS 5-28564	3219
42	MASS INST OF TECH	Hibbard, W.	GSFC	Bradt, H.	NAS 5-29116	3221
42	MASS INST OF TECH	Stokes, J. W.	MSFC	Akin, D. L.	NAS 8-34959	3227
42	MASS INST OF TECH	Venneri, S. L.	HQ-RT	Mar, J. W.	NAGW 21	3186
42	NO CAR A&T STATE U	Montgomery, R. C.	LARC	Abu-saba, E.	NAG 1-405	3969
42	OHIO STATE UNIV	Savino, J. M.	LERC	Gregorek, G. M.	NAG 3-330	4167
42	OLD DOMINION UNIV	Montgomery, R. C.	LARC	McRee, G. J.	NAG 1-318	4926
42	OLD DOMINION UNIV	Montgomery, R. C.	LARC	Goglia, G. L.	NAG 1-429	4936
42	OLD DOMINION UNIV	Woolley, C. T.	LARC	Hou, J. W.	NAG 1-501	4942
42	PRAIRIE VIEW A&M U	Kennedy, R. C.	JSC	Greaux, A. E.	NAS 9-16899	4578
42	PRINCETON UNIVERSITY	Kalshoven, J.	GSFC	Gunn, J. E.	NAG 5-241	3621
42	PURDUE UNIVERSITY	Williams, J. P.	LARC	Skelton, R. E.	NAG 1-468	2663
42	PURDUE UNIVERSITY	Shealau, J. P.	HQ-MF	Williams, T. J.	NAGW 513	2694
42	STANFORD UNIVERSITY	Lemke, L. G.	ARC	Powell, J. D.	NCC 2-29	1606
42	STANFORD UNIVERSITY	Lum, H.	ARC	Cannon, R. H.	NCC 2-333	1635
42	STANFORD UNIVERSITY	Gorland, S.	LERC	Breakwell, J. V.	NAG 3-63	1509
42	STANFORD UNIVERSITY	Lynch, J. T.	HQ-EE	Banks, P. M.	NAGW 235	1525
42	UNIV OF ARIZONA	Ennis, D. J.	ARC	Sumner, R. E.	NAS 2-12230	1257
42	UNIV CALIF-SAN DIEGO	Hibbard, W. B.	GSFC	Rothschild, R. E.	NAS 5-27602	1932
42	UNIV CALIF-SAN DIEGO	Hibbard, W.	GSFC	Rothschild, R.	NAS 5-29117	1935
42	UNIV CALIF-SAN DIEGO	Tiesenhausen, G.	MSFC	Arnold, J. R.	NAG 8-470	1900
42	UNIV OF CHICAGO	Fimmel, R. O.	ARC	Simpson, J. A.	NAS 2-11126	2564
42	UNIV COLORADO-BOLDR	Vescelus, E.	HQ-EL	Rosch, D. W.	NASW 4020	2182
42	UNIV OF IOWA	Craig, R. A.	ARC	Van Allen, J. A.	NAS 2-11125	2766
42	UNIV MARYLAND-COL PK	Vescelus, F.	HQ-EL	Adler, I.	NASW 3978	3008
42	UNIV OF PENNSYLVANIA	Woolford, B. J.	JSC	Badler, N. I.	NAS 9-16634	4435
42	UNIV OF PENNSYLVANIA	Brown, J. W.	JSC	Badler, N. I.	NAS 9-17239	4438
42	UNIV OF PITTSBURGH	Kerslake, W. R.	LERC	McWilliams, P. A.	NAS 3-22662	4451
42	UNIV OF SOUTHERN CAL	Young, J. W.	LARC	Masri, S. F.	NAG 1-471	2065
42	UNIV STHN COLORADO	Callas, G. P.	ARC	Carestia, R. A.	NCC 2-41	2212
42	UNIV TENNESSEE-KNOXV	McMillion, J. M.	MSFC	Hung, J. C.	NAS 8-34426	4540
42	UNIV TEXAS-AUSTIN	Shawe, M. E.	GSFC	Sturm, R.	NASW 3296	4762
42	UNIV TEXAS-AUSTIN	Zupp, G.	JSC	Craig, R.	NAS 9-17254	4761
42	UNIV OF WASHINGTON	Conway, E. J.	LARC	Hertzberg, A.	NAG 1-327	5102
42	VIRGINIA POLY INST	Williams, J. P.	LARC	Meirovitch, L.	NAG 1-225	5038
43	AUBURN UNIV-AUBURN	Owens, F. C.	HQ-LE	Tatarchuk, B. J.	NGT 01-003-801	1030
43	CASE WESTERN RESERVE	Owens, F. C.	HQ-LE	Fek, D. L.	NGT 36-027-806	4114
43	CASE WESTERN RESERVE	Owens, F. C.	HQ-LE	Liu, C. C.	NGT 36-027-808	4116
43	CASE WESTERN RESERVE	Owens, F. C.	HQ-LB	Liu, C. C.	NGT 36-027-800	4108
43	CASE WESTERN RESERVE	Owens, F. C.	HQ-LB	Edwards, R. V.	NGT 36-027-802	4110
43	CLARKSON UNIVERSITY	Reeves, F.	MSFC	Wilcox, W. R.	NAG 8-480	3704
43	CLARKSON UNIVERSITY	Yates, I. C.	MSFC	Wilcox, W. R.	NAG 8-541	3705
43	CLARKSON UNIVERSITY	Owens, F. C.	HQ-LE	Subramanian, R. S.	NGT 33-011-801	3712
43	CLARKSON UNIVERSITY	Owens, F. C.	HQ-LB	Rasmussen, D.	NGT 33-011-800	3711
43	CLEVELAND STATE UNIV	Rutledge, S. K.	LERC	Hambourger, P. D.	NCC 3-19	4140



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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
43	CLEVELAND STATE UNIV	Wagner, R. F.	LERC	Coulman, G.	NCC 3-23	4143
43	CORNELL UNIVERSITY	Wydeven, T.	ARC	Shuler, M. L.	NSG 2408	3810
43	GEORGIA INST OF TECH	Lundy, F. E., Jr.	KSC	Winnick, J.	NAS10-10560	2449
43	LEHIGH UNIVERSITY	Kornfeld, D. M.	MSFC	Micale, F. J.	NAS 8-36286	4360
43	LA ST U&A&M COL-BRGE	Lezberg, E. A.	LERC	Frenklach, M.	NAG 3-477	2849
43	LA ST U&A&M COL-BRGE	Haggard, J.	LERC	Frenklach, M.	NAS 3-23542	2856
43	MASS INST OF TECH	Wydwon, J.	ARC	Hall, G. A.	NAG 2-224	3128
43	MURRAY STATE U-KY	Kelliher, W. C.	LARC	Maddox, W. E.	NCC 1-92	2837
43	NO CAROLINA STATE U	Kang, M. P.	LERC	Fedkiw, P. S.	NAG 3-649	3995
43	NORTHWESTERN UNIV	Briehl, D.	LERC	Law, C. K.	NAG 3-361	2521
43	RENSSELAER POLY-NY	Friedman, R.	LERC	Moynihan, C. T.	NAG 3-213	3853
43	RUTGERS ST U-PISCTWY	Reid, M. A.	LERC	Freeman, R. W.	NAG 3-514	3656
43	STANFORD UNIVERSITY	Poppa, H.	ARC	Boudart, M.	NCA 2-53	1565
43	STANFORD UNIVERSITY	Poppa, H.	ARC	Boudart, M.	NCA 2-745311	1581
43	SYRACUSE UNIVERSITY	Gordon, P.	HQ-EN	Schwarz, J. A.	NAGW 466	3947
43	TEXAS A&M UNIVERSITY	Fox, T. H.	MSFC	Noah, S. T.	NAS 8-36182	4651
43	UNIV OF AKRON	Friedman, R.	LERC	Schruben, D. L.	NAG 3-488	4210
43	UNIV OF AKRON	Reid, M. A.	LERC	Savinell, R. F.	NAG 3-500	4211
43	UNIV OF AKRON	Owens, F. C.	HQ-LB	Savinell, R. F.	NGT 36-001-802	4214
43	UNIV OF AKRON	Owens, F. C.	HQ-LB	Savinell, R. F.	NGT 36-001-803	4215
43	UNIV CALIF-BERKELEY	MacElroy, R. D.	ARC	Tinoco, I.	NCA 2-50204	1717
43	UNIV CALIF-DAVIS	Cagliostro, D. E.	ARC	Needles, H. L.	NCC 2-264	1769
43	UNIV CALIF-DAVIS	Cagliostro, D. E.	ARC	Higgins, B. G.	NCC 2-331	1771
43	UNIV OF DELAWARE	Alterescu, S.	GSFC	Glass, W. P.	NAS 5-26273	2248
43	UNIV OF FLORIDA	Howard, R.	KSC	Farber	NAS10-10932	2371
43	UNIV HOUSTON-HOUSTON	Kroll, K.	JSC	Lienhard, J. H.	NAS 9-17442	4701
43	UNIV HOUSTON-HOUSTON	Miller, C. D.	LERC	Dukler, A. E.	NAG 3-510	4684
43	UNIV MO-COLUMBIA	Owens, F. C.	HQ-LE	Marrero, T. R.	NGT 26-007-800	3502
43	UNIV OF TOLEDO	Buckley, D. H.	LERC	Rengstorff, G. W.	NAG 3-276	4256
43	UNIV OF UTAH	Clark, I. O.	LARC	Rosenberger, F. F.	NAG 1-608	4828
43	UNIV OF VIRGINIA	Owens, F. C.	HQ-LE	Fisher, S. S.	NGT 47-005-802	5020
43	UNIV OF VIRGINIA	Owens, F. C.	HQ-LB	Lilleleht, L. U.	NGT 47-005-801	5019
43	VIRGINIA POLY INST	Owens, F. C.	HQ-LB	Grossman, B.	NGT 47-004-808	5092
43	YALE UNIVERSITY	Kohl, F. J.	LERC	Rosner, D. E.	NAG 3-201	2228
43	YALE UNIVERSITY	Santoro, G. J.	LERC	Rosner, D. E.	NAG 3-590	2229
44	AUBURN UNIV-AUBURN	Faile, G. C.	MSFC	Springfield, C. W.	NAS 8-36287	1024
44	CASE WESTERN RESERVE	Owens, F. C.	HQ-LB	Huckelbridge, A. A.	NGT 36-027-804	4112
44	HOWARD UNIVERSITY	Alcorn, G. E.	GSFC	Spencer, M. G.	NAG 5-246	2301
44	UNIV CALIF-BERKELEY	Owens, F. C.	HQ-LE	Taylor, R.	NGT 05-003-807	1750
44	UNIV MARYLAND-COL PK	Rango, A.	GSFC	Ragan, R. M.	NAG 5-9	2940
45	ALABAMA A&M UNIV	Stossinopoulos, E. G.	GSFC	McQuire, S.	NAG 5-578	1000
45	ALABAMA A&M UNIV	Bilbro, J. W.	MSFC	Murtz, S. S.	NSG 8037	1013
45	ARIZONA STATE UNIV	Gilreath, M. C.	LARC	Balanis, C. A.	NAG 1-562	1128
45	ARIZONA STATE UNIV	Arrison, A.	LERC	Wang, E. Y.	NAG 3-383	1136
45	ARIZONA STATE UNIV	Wenberg, I.	LERC	Shen, C. C.	NAG 3-650	1140
45	JOHNS HOPKINS UNIV	Fuhr, P. L.	GSFC	Davidson, F. M.	NAG 5-356	2893
45	JOHNS HOPKINS UNIV	Pitts, F. L.	LARC	Masson, G. E.	NSG 1442	2919
45	CALIF INST OF TECH	Hansen, I. G.	LERC	Middlebrook, R. D.	NAG 3-615	1318
45	CARNEGIE-MELLON UNIV	Finelli, G. B.	LARC	Siewiorek, D. P.	NAG 1-190	4319
45	CARNEGIE-MELLON UNIV	Hayes, P. J.	LARC	Kryder, M. H.	NAG 1-395	4320
45	CARNEGIE-MELLON UNIV	Magee, C. J.	LARC	Casasent, D.	NAG 1-409	4321
45	CARNEGIE-MELLON UNIV	Baumbick, R. J.	LERC	Casasent, D.	NAG 3-5	4324
45	CASE WESTERN RESERVE	Seasholtz, R. G.	LERC	Edwards, R. V.	NAG 3-2	4031
45	CASE WESTERN RESERVE	Stankiewicz, N.	LERC	Ferendeci, A. M.	NAG 3-225	4041
45	CASE WESTERN RESERVE	Smetana, J.	LERC	Collins, R. E.	NAG 3-291	4051
45	CASE WESTERN RESERVE	Decker, A. J.	LERC	Thompson, E. D.	NAG 3-432	4067
45	CASE WESTERN RESERVE	Beach, R. F.	LERC	Lukic, V. P.	NAG 3-559	4084
45	CASE WESTERN RESERVE	Good, B.	LERC	Taylor, P. L.	NAG 3-612	4090
45	CASE WESTERN RESERVE	Downey, A.	LERC	Collin, R. E.	NCC 3-29	4101
45	CASE WESTERN RESERVE	Connolly, D. J.	LERC	Gordon, W. L.	NCC 3-40	4103

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
45	CITY COLLEGE OF N Y	Schadelbauer, S.	JSC	Schilling, D. L.	NAS 9-16473	3697
45	CLEVELAND STATE UNIV	Whyte, W. A.	LERC	Groumpos, P. P.	NAG 3-156	4120
45	CLEVELAND STATE UNIV	Flood, D. J.	LERC	Goradia, M. G.	NAG 3-241	4121
45	CLEVELAND STATE UNIV	Brinker, D. J.	LERC	Goradia, C.	NAG 3-249	4122
45	CLEVELAND STATE UNIV	Bercaw, R. W.	LERC	Piszczo, M. F., Jr.	NAG 3-338	4125
45	CLEVELAND STATE UNIV	Gourash, F.	LERC	Villaseca, F. E.	NAG 3-518	4131
45	CLEVELAND STATE UNIV	Sundberg, G. R.	LERC	Maisel, J.	NAG 3-547	4132
45	CLEVELAND STATE UNIV	Brinker, D. J.	LERC	Goradia, C.	NAG 3-573	4135
45	CLEVELAND STATE UNIV	Fordyce, J. S.	LERC	Chang, G. C.	NCC 3-16	4138
45	CLEVELAND STATE UNIV	Connolly, D. J.	LERC	Groumpos, P. P.	NCC 3-20	4141
45	COLBY COLLEGE	Snyder, D. B.	LERC	Metz, R. N.	NAG 3-576	2873
45	COLUMBIA UNIVERSITY	Lopez, H.	GSFC	Prucnal, P.	NAS 5-29138	3738
45	CORNELL UNIVERSITY	Strong, J. P.	GSFC	Reeves, A. P.	NAG 5-403	3772
45	CORNELL UNIVERSITY	Downey, A. N.	LERC	Frey, J.	NAG 3-619	3768
45	CORNELL UNIVERSITY	Alterovitz, S. A.	LERC	Eastman, L. F.	NAG 3-632	3769
45	CORNELL UNIVERSITY	Owens, F. C.	HQ-LE	Kelley, M. C.	NGT 33-010-802	3806
45	GEORGE WASHINGTON U	Wadding, S. V.	GSFC	Lee, T. N.	NAS 5-28169	2275
45	GEORGIA INST OF TECH	Dod, L. R.	GSFC	Forsythe, R. E.	NSG 5012	2452
45	GEORGIA INST OF TECH	Eggers, D. S.	JSC	Cooke, W. P.	NAS 9-16353	2446
45	GEORGIA INST OF TECH	Tang, S.	JSC	Cooke, B.	NAS 9-17445	2448
45	GEORGIA INST OF TECH	Clark, L. G.	LARC	Blue, M. D.	NAS 1-14654	2432
45	GEORGIA INST OF TECH	O'neal, R. L.	LARC	Gaylord, T. K.	NAS 1-15370	2433
45	GEORGIA INST OF TECH	Krawczonek, W. M.	LERC	Gallagher, J. J.	NAG 3-282	2421
45	HOFSTRA UNIVERSITY	Staton, L. D.	LARC	Weissman, D. E.	NAG 1-311	3817
45	HOWARD UNIVERSITY	Truszkowski, W. F.	GSFC	DeLoatch, E. M.	NCC 5-25	2308
45	HOWARD UNIVERSITY	Owens, F. C.	HQ-LB	Bradley, T. J.	NGT 09-011-802	2310
45	HOWARD UNIVERSITY	Owens, F. C.	HQ-LB	Harris, G.	NGT 09-011-803	2311
45	JOHN CARROLL UNIV	Baumbick, R. J.	LERC	Fritsch, K.	NAG 3-571	4152
45	LAFAYETTE COLLEGE	Pitts, F. L.	LARC	Demarest, L. R.	NAG 1-432	4354
45	MASS INST OF TECH	Magee, C. J.	LARC	Fonstad, C. G.	NAG 1-48	3108
45	MICHIGAN STATE UNIV	Puthoff, R. L.	LERC	Schlueter, R. A.	NAG 3-399	3323
45	MICHIGAN STATE UNIV	Puthoff, R. L.	LERC	Park, G. L.	NAG 3-530	3325
45	MICHIGAN STATE UNIV	Chomos, G. J.	LERC	Freeman, J. C.	NCC 3-26	3335
45	MISSISSIPPI STATE U	Seiler, B. K.	MSFC	Ingels, F. M.	NAS 8-36044	3479
45	MISSISSIPPI STATE U	Carter, C. H.	HQ-LB	Mitchell, J. R.	NGT 25-001-801	3484
45	MISSISSIPPI STATE U	Owens, F. C.	HQ-LB	Ingels, F. M.	NGT 25-006-800	3486
45	NEW MEX ST U-LAS CR	Blum, A.	GSFC	Gilcrease, A.	NAS 5-26662	3674
45	NO CAR A&T STATE U	Clark, I. O.	LARC	Abul-fadl, A.	NAG 1-403	3967
45	NO CAR A&T STATE U	Magee, C. J.	LARC	Stefanakos, E. K.	NSG 1390	3979
45	NO CAROLINA STATE U	Benz, H. F.	LARC	Snyder, W. E.	NAG 1-20	3981
45	NO CAROLINA STATE U	Bailey, M. C.	LARC	Kauffman, J. F.	NSG 1588	4011
45	NORTHEASTERN UNIV	Joshi, S. M.	LARC	Lin, J. G.	NAG 1-386	3278
45	OHIO STATE UNIV	Wolfe, J. H.	ARC	Kraus, J. D.	NSG 2162	4189
45	OHIO STATE UNIV	Gilreath, M. C.	LARC	Burnside, W. D.	NAG 1-333	4159
45	OHIO STATE UNIV	Beck, F. B.	LARC	Rudduck, C.	NAS 1-17450	4182
45	OHIO STATE UNIV	Gilreath, M. C.	LARC	Burnside, W. D.	NSG 1498	4187
45	OHIO STATE UNIV	Gilreath, M. C.	LARC	Burnside, W. D.	NSG 1613	4188
45	OHIO STATE UNIV	Miller, E. F.	LERC	Lewis, C. A.	NAG 3-159	4166
45	OHIO STATE UNIV	Rice, E. J.	LERC	Pathak, P. H.	NAG 3-476	4171
45	OHIO STATE UNIV	Acosta, R.	LERC	Ksienski, A. A.	NAG 3-536	4172
45	OHIO UNIVERSITY	Edwards, F. G.	ARC	McFarland, R. H.	NAS 2-11969	4196
45	OHIO UNIVERSITY	Hood, R. V.	LARC	McFarland, R. H.	NGR 36-009-017	4197
45	OLD DOMINION UNIV	Holmes, H. K.	LARC	McRae, C. J.	NAG 1-387	4934
45	OLD DOMINION UNIV	Hellbaum, R. F.	LARC	Goglia, G. L.	NSG 1177	4972
45	PENN STATE U-UNIV PK	Owens, F. C.	HQ-LB	Nisbet, J. S.	NGT 39-009-807	4420
45	PURDUE UNIVERSITY	Sater, B. L.	LERC	Gray, J. L.	NAG 3-657	2686
45	PURDUE UNIVERSITY	Yates, I. C.	MSFC	Paciesas, W. S.	NAS 8-34303	2700
45	QUEENSBOROUGH COMM C	Webster, L. D.	ARC	Zanger, H.	NCC 2-108	3846
45	RENSSELAER POLY-NY	Armstrong, E. S.	LARC	Balas, M. J.	NAG 1-171	3847
45	RENSSELAER POLY-NY	Joshi, S. M.	LARC	Kaufman, H.	NAG 1-515	3850

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
45	RENSSELAER POLY-NY	Weinberg, I.	LERC	Ghandhi, S. K.	NAG 3-604	3858
45	RICE UNIVERSITY	Owens, F. C.	HQ-LE	Burrus, C. S.	NGT 44-006-807	4609
45	RICE UNIVERSITY	Owens, F. C.	HQ-LB	Rabson, T. A.	NGT 44-006-803	4605
45	RICE UNIVERSITY	Owens, F. C.	HQ-LB	Burrus, C. S.	NGT 44-006-804	4606
45	RICE UNIVERSITY	Owens, F. C.	HQ-LB	De Figueriredo H, R. J.	NGT 44-006-806	4608
45	SAN JOSE STATE UNIV	Deboo, G. J.	ARC	Yuen, C.	NAG 2-280	1447
45	SAN JOSE STATE UNIV	Owens, F. C.	HQ-LB	Freeman, J.	NGT 05-022-800	1486
45	STANFORD UNIVERSITY	Grant, T. L.	ARC	Tobagi, F. A.	NAG 2-292	1504
45	STANFORD UNIVERSITY	Buften, J. L.	GSFC	Byer, R. L.	NAG 5-220	1516
45	STANFORD UNIVERSITY	Magee, C. J.	LARC	Byer, R. L.	NAG 1-182	1488
45	TENNESSEE STATE UNIV	Randall, J. L.	MSFC	Isibor, E. I.	NAG 8-30	4517
45	TEXAS TECH UNIV	Pitts, F. L.	LARC	Trost, T. F.	NAG 1-28	4673
45	TUSKEGEE INSTITUTE	Randall, J. L.	MSFC	Doreswamy, C. V.	NAG 8-40	1038
45	UNIV CALIF-BERKELEY	Wales, R. O.	GSFC	Mozer, F. S.	NAG 5-375	1675
45	UNIV CALIF-L ANGELES	Abbott, L. W.	DFRF	Smyth, R. K.	NSG 4027	1871
45	UNIV CALIF-L ANGELES	Fripp, A. L.	LARC	Allen, F. G.	NAG 1-267	1790
45	UNIV CALIF-L ANGELES	Joshi, S. M.	LARC	Balakrishnan, A. V.	NAG 1-464	1793
45	UNIV CALIF-SAN DIEGO	Scudder, J. D.	GSFC	Torbert, R. B.	NAS 5-28164	1934
45	UNIV OF CENTRAL FLA	Bailey, M. C.	LARC	Christodoulou, C. G.	NAG 1-615	2345
45	UNIV OF CINCINNATI	Sundberg, G. R.	LERC	Henderson, H. T.	NAG 3-297	4224
45	UNIV OF CINCINNATI	Leon, R.	LERC	Mantei, T. D.	NAG 3-455	4226
45	UNIV OF CINCINNATI	Leon, R.	LERC	Mantei, T. D.	NAG 3-515	4229
45	UNIV OF CINCINNATI	Myers, I. T.	LERC	Boyd, J. T.	NAG 3-532	4230
45	UNIV OF CINCINNATI	Whyte, W. A.	LERC	Ramamoorthy, P. A.	NAG 3-582	4231
45	UNIV OF CINCINNATI	Anzic, G.	LERC	Kapoor, V. J.	NCC 3-44	4236
45	UNIV OF CINCINNATI	Sundberg, G. R.	LERC	Henderson, H. T.	NSG 3022	4239
45	UNIV OF DELAWARE	Flood, D. J.	LERC	Barnett, A. M.	NAG 3-422	2245
45	UNIV HOUSTON-CL LAKE	O'connell, D.	JSC	Dickerson, E. T.	NAS 9-17407	4722
45	UNIV OF IDAHO	Miller, W.	GSFC	Maki, G. K.	NAS 5-26534	2508
45	UNIV ILLINOIS-URBANA	Abshire, J. B.	GSFC	Gardner, C. S.	NSG 5049	2636
45	UNIV ILLINOIS-URBANA	Murray, N. D.	LARC	Reed, D. A.	NAG 1-595	2604
45	UNIV ILLINOIS-URBANA	Lee, R. Q.	LERC	Lo, Y. T.	NAG 3-418	2610
45	UNIV ILLINOIS-URBANA	Acosta, R. J.	LERC	Lee, S. W.	NAG 3-419	2611
45	UNIV ILLINOIS-URBANA	Smetana, J.	LERC	Mittra, R.	NAG 3-420	2612
45	UNIV ILLINOIS-URBANA	Cho, Y. C.	LERC	Lee, S. W.	NAG 3-475	2614
45	UNIV ILLINOIS-URBANA	Godlewski, M. P.	LERC	Leburton, J. P.	NAG 3-507	2616
45	UNIV ILLINOIS-URBANA	Alterovitz, S. A.	LERC	Morkoc, H.	NAG 3-613	2618
45	UNIV ILLINOIS-URBANA	Smetana, J.	LERC	Mittra, R.	NCC 3-38	2633
45	UNIV OF KANSAS	Pitts, F. L.	LARC	Demarest, K. R.	NAG 1-514	2794
45	UNIV MARYLAND-COL PK	Petuchowski, S. J.	GSFC	Davis, C. C.	NAG 5-413	2961
45	UNIV MARYLAND-COL PK	Coady, R. E.	GSFC	Ligomedies, P. A.	NAS 5-28180	2998
45	UNIV MARYLAND-COL PK	Fales, C. L.	LARC	Farvardin, N.	NAG 1-582	2935
45	UNIV MD-EASTRN SHORE	Mundy, J. R.	GSFC	Rich, S.	NCA 5-99	3043
45	UNIV OF MASS-AMHERST	Bailey, M. C.	LARC	Pozar, D. M.	NAG 1-163	3282
45	UNIV OF MASS-AMHERST	Kendall, B. M.	LARC	Yngvesson, K. S.	NAG 1-279	3283
45	UNIV MICH-ANN ARBOR	Brace, L. H.	GSFC	Unavailable	NAS 5-27305	3406
45	UNIV MICH-ANN ARBOR	Clark, I. O.	LARC	Bhattacharya, P. K.	NAG 1-555	3355
45	UNIV MICH-ANN ARBOR	Bhasin, K. B.	LERC	Haddad, G. I.	NAG 3-618	3368
45	U MINN-MNPLS-ST PAUL	Kaiser, M. L.	GSFC	Kellogg, P. J.	NAS 5-28574	3460
45	UNIV NEBRASKA-LINCLN	Jaworske, D. A.	LERC	Woollam, J. A.	NAG 3-95	3557
45	UNIV N CAR-CHARLOTTE	Armstrong, E. S.	LARC	Kakad, Y. P.	NAG 1-535	4019
45	UNIV N CAR-CHARLOTTE	Schwarze, G. E.	LERC	Lukic, V. P.	NAG 3-609	4020
45	UNIV OF NOTRE DAME	Grant, T. L.	ARC	Herro, M. A.	NCA 2-562401	2723
45	UNIV OF NOTRE DAME	Brinker, D. J.	LERC	Berry, W. B.	NAG 3-622	2721
45	UNIV OF NOTRE DAME	Lehtinen, B.	LERC	Sain, M. K.	NSG 3048	2727
45	UNIV OKLAHOMA-NORMAN	Hansen, I. C.	LERC	Zelby, L. W.	NAG 3-508	4291
45	UNIV OF PITTSBURGH	Holmes, H. K.	LARC	Meiksin, Z. H.	NAG 1-597	4441
45	UNIV OF REDLANDS	Hendricks, H. D.	LARC	Wang, S.	NAG 1-580	2035
45	UNIV OF SANTA CLARA	Grant, T. L.	ARC	Alkhatib, H. S.	NCC 2-128	2058
45	UNIV OF SOUTHERN CAL	Brinker, D. J.	LERC	Dapkus, P. D.	NAG 3-529	2068

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45	UNIV STHN COLORADO	Doane, D. H.	ARC	Dunn, W. R.	NCC 2-303	2215
45	UNIV SO MISSISSIPPI	Joyce, R. M.	GSFC	Bogart, T. F.	NAG 5-393	3492
45	UNIV TEXAS-AUSTIN	Lapoint, D. A.	JSC	Griffin, C. R.	NAS 9-16955	4758
45	UNIV TEXAS-AUSTIN	Davidson, S. E.	JSC	Griffin, C. R.	NAS 9-17228	4760
45	UNIV OF TOLEDO	Whyte, W. A.	LERC	Kwatra, S. C.	NAG 3-42	4253
45	UNIV OF TOLEDO	Hansen, I. G.	LERC	Stuart, T. A.	NAG 3-413	4260
45	UNIV OF TOLEDO	Schwarze, G. E.	LERC	Stuart, T. A.	NAG 3-478	4262
45	UNIV OF TOLEDO	Corrigan, R. D.	LERC	Keith, T. G.	NCC 3-5	4272
45	UNIV OF TOLEDO	Connolly, D. J.	LERC	Kwatra, S. C.	NCC 3-22	4273
45	UNIV OF UTAH	Heighway, J.	LERC	Grow, R. W.	NAG 3-327	4830
45	UNIV OF VIRGINIA	Ewin, A. J.	GSFC	Mattauch, R. J.	NAG 5-712	5005
45	UNIV OF VIRGINIA	Jones, R. L.	GSFC	Mattauch, R. J.	NAS 5-26466	5015
45	UNIV OF VIRGINIA	Magee, C. J., Jr.	LARC	Batchman, T. E.	NAG 1-177	4982
45	UNIV OF VIRGINIA	Jobson, D. J.	LARC	Batchman, T. E.	NAG 1-262	4985
45	UNIV OF VIRGINIA	Connolly, D. J.	LERC	Wilson, S. G.	NAG 3-316	4996
45	UNIV WISC-MADISON	Kittel, P.	ARC	Van Sciver, S. W.	NAG 2-242	5178
45	UNIV WISC-MADISON	Hansen, I. G.	LERC	Novotny, D. W.	NAG 3-492	5184
45	UNIV WISC-MADISON	Hansen, I. G.	LERC	Lipo, T. A.	NAG 3-631	5185
45	VIRGINIA POLY INST	Rodriguez, G. E.	GSFC	Lee, F. C.	NAG 5-518	5078
45	VIRGINIA POLY INST	Hirschmann, E.	GSFC	Bostian, C. W.	NAS 5-22577	5084
45	VIRGINIA POLY INST	Cantrell, J. H., Jr.	LARC	Claus, R. O.	NAG 1-369	5046
45	VIRGINIA POLY INST	Cantrell, J. H., Jr.	LARC	Claus, R. O.	NAG 1-482	5053
45	VIRGINIA POLY INST	Kolecki, J. C.	LERC	Lee, F. C.	NAG 3-220	5069
45	VIRGINIA POLY INST	Sundberg, G. R.	LERC	Chen, D. D.	NAG 3-240	5070
45	VIRGINIA POLY INST	Hansen, I. G.	LERC	Lee, F. C.	NAG 3-405	5073
45	VIRGINIA POLY INST	Hansen, I.	LERC	Lee, F. C.	NAG 3-551	5076
45	YALE UNIVERSITY	Rocha, R.	JSC	Narendra, K. S.	NAS 9-17395	2238
46	ALABAMA A&M UNIV	Randall, J. L.	MSFC	Saha, H.	NAG 8-23	1001
46	ALABAMA A&M UNIV	Randall, J. L.	MSFC	Venkateswarly, P.	NAG 8-29	1004
46	ARIZONA STATE UNIV	Fleming, D. P.	LERC	Nelson, H. D.	NAG 3-6	1131
46	ARIZONA STATE UNIV	Holdeman, J. D.	LERC	Mongia, H. C.	NAG 3-167	1133
46	ARIZONA STATE UNIV	Fleming, D. P.	LERC	Nelson, H. D.	NAG 3-580	1138
46	ARIZONA STATE UNIV	Simon, F. F.	LERC	Metzger, D. E.	NAG 3-623	1139
46	JOHNS HOPKINS UNIV	Newman, J. C.	LARC	Douglas, A. S.	NAG 1-484	2885
46	JOHNS HOPKINS UNIV	Newman, J. C., Jr.	LARC	Sharpe, W. N., Jr.	NAG 1-526	2887
46	AUBURN UNIV-AUBURN	Black, R. E.	MSFC	Jemian, W. A.	NAG 8-491	1014
46	AUBURN UNIV-AUBURN	Guest, S. H.	MSFC	Crocker, M. J.	NAS 8-36146	1022
46	AUBURN UNIV-AUBURN	Cox, J. W.	MSFC	Day, W. B.	NAS 8-36475	1028
46	CALIF INST OF TECH	Garcia, F. F.	MSFC	Acosta, A. J.	NAS 8-33108	1358
46	CALIF INST OF TECH	Owens, F. C.	HQ-LB	Caughey, T. K.	NGT 05-002-801	1373
46	CAL STATE U-LG BEACH	Townsend, D. P.	LERC	Akin, L.	NAG 3-20	1401
46	CARNEGIE-MELLON UNIV	Shih, T.	LERC	Ramos, J. I.	NAG 3-21	4325
46	CARNEGIE-MELLON UNIV	Hendricks, R. C.	LERC	Hughes, W. F.	NAG 3-166	4326
46	CARNEGIE-MELLON UNIV	Kielb, R. E.	LERC	Griffin, J. H.	NAG 3-367	4327
46	CARNEGIE-MELLON UNIV	Chubb, D. L.	LERC	Lawless, J. L.	NAG 3-437	4329
46	CARNEGIE-MELLON UNIV	Chubb, D. L.	LERC	Lawless, J. L.	NAG 3-614	4331
46	CARNEGIE-MELLON UNIV	Tacina, R. R.	LERC	Chigier, N.	NCC 3-37	4334
46	CARNEGIE-MELLON UNIV	Owens, F. C.	HQ-LB	Swedlow, J. L.	NGT 39-087-801	4336
46	CASE WESTERN RESERVE	Liebert, C. H.	LERC	Dybbs, A.	NAG 3-97	4035
46	CASE WESTERN RESERVE	Van Fossen, G. J.	LERC	Reshotko, E.	NAG 3-230	4042
46	CASE WESTERN RESERVE	Anderson, D. N.	LERC	T'ien, T. S.	NAG 3-290	4050
46	CASE WESTERN RESERVE	McDonald, G. E.	LERC	Mullen, R. L.	NAG 3-369	4058
46	CASE WESTERN RESERVE	Kascak, A. F.	LERC	Adams, M. L.	NAG 3-391	4061
46	CASE WESTERN RESERVE	Shannon, J. L., Jr.	LERC	Mendelson, A.	NAG 3-396	4062
46	CASE WESTERN RESERVE	Norgren, C. T.	LERC	Dybbs, A.	NAG 3-467	4071
46	CASE WESTERN RESERVE	Gross, B.	LERC	Chudnovsky, P. A.	NAG 3-585	4089
46	CASE WESTERN RESERVE	Kascak, A. F.	LERC	Mullen, R. L.	NAG 3-653	4094
46	CASE WESTERN RESERVE	Hamrock, B. J.	LERC	Prahl, J. M.	NCC 3-30	4102
46	CASE WESTERN RESERVE	Owens, F. C.	HQ-LB	Adams, M.	NGT 36-027-803	4111
46	CATHOLIC UNIVERSITY	Osborne, E. P.	GSFC	Baz, A. M.	NAG 5-520	2254

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## APPENDIX - CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
46	CLARKSON UNIVERSITY	Johnson, W. S.	LARC	Sancaktak, E.	NAG 1-284	3702
46	CLEMSON UNIV-CLEMSON	Whitcomb, J. D.	LARC	Goree, J. G.	NAG 1-316	4493
46	CLEMSON UNIV-CLEMSON	Poe, C. C., Jr.	LARC	Goree, J. G.	NSG 1297	4499
46	CLEVELAND STATE UNIV	Lewicki, D. G.	LERC	Flanagan, P. M.	NAG 3-315	4124
46	CLEVELAND STATE UNIV	Brown, G. V.	LERC	Bellini, P. X.	NAG 3-375	4128
46	CLEVELAND STATE UNIV	Oswald, F. B.	LERC	Frater, J. L.	NAG 3-471	4129
46	CLEVELAND STATE UNIV	Miller, D. R.	LERC	Kasuba, R.	NCC 3-6	4137
46	CLEVELAND STATE UNIV	Presler, A. F.	LERC	Alkasab, K. A.	NCC 3-17	4139
46	CLEVELAND STATE UNIV	Neely, G. M.	LERC	Evans, A. L.	NCC 3-50	4148
46	COLLEGE OF WM & MARY	Tanner, J. A.	LARC	Anderson, C. M.	NCC 1-40	4883
46	COLORADO STATE UNIV	McCoy, J. E.	JSC	Wilbur, P. J.	NAG 9-120	2096
46	COLORADO STATE UNIV	Rawlin, V. K.	LERC	Wilbur, P. J.	NGR 06-002-112	2108
46	COLORADO STATE UNIV	Campbell, W.	MSFC	Sandborn, V. A.	NAS 8-36354	2101
46	COLORADO STATE UNIV	Owens, F. C.	HQ-LB	Kaufman, H. R.	NGT 06-002-801	2109
46	CORNELL UNIVERSITY	Tang, H. M.	LERC	Abel, J. F.	NAG 3-395	3767
46	DREXEL UNIVERSITY	Ardena, M. D.	ARC	Calise, J.	NAS 2-11834	4348
46	DREXEL UNIVERSITY	Bigelow, C. A.	LARC	Delale, F.	NAG 1-480	4341
46	DREXEL UNIVERSITY	Humenik, F. M.	LERC	Cernansky, N. P.	NAG 3-382	4343
46	DUKE UNIVERSITY	Brown, G. V.	LERC	Dowell, E. H.	NAG 3-516	3958
46	EASTERN KENTUCKY U	Fishman, G. J.	MSFC	Laird, C. E.	NAS 8-36649	2835
46	FLORIDA A&M UNIV	Alterescu, S.	GSFC	Fresh, F. A.	NAS 5-25165	2320
46	FLORIDA INST OF TECH	Lin, F. N.	KSC	Bauman, T. E.	NAS10-10980	2327
46	GEORGIA INST OF TECH	Robinson, J. C.	LARC	Colwell, G. T.	NAG 1-392	2411
46	HARVEY MUDD COLLEGE	Gupta, K. K.	ARC	Tanenbaum, B. S.	NCA 2-283404	1419
46	HOWARD UNIVERSITY	Housner, J. M.	LARC	Broome, T. H., Jr.	NAG 1-383	2293
46	ILL INST OF TECH	Whitcomb, J. D.	LARC	Daniel, I. M.	NAG 1-347	2510
46	IOWA STATE UNIV	Steger, J. L.	ARC	Pletcher, R. H.	NCA 2-17	2743
46	IOWA STATE UNIV	Owens, F. C.	HQ-LB	Okiishi, T.	NGT 16-002-802	2749
46	LEHIGH UNIVERSITY	Johnson, W. S.	LARC	Erdogan, F.	NGR 39-007-011	4363
46	LEHIGH UNIVERSITY	Lubomski, J. F.	LERC	Johnson, S. H.	NAG 3-135	4356
46	MASS INST OF TECH	Pennington, J. E.	LARC	Dubowsky, S.	NAG 1-489	3115
46	MASS INST OF TECH	Berke, L.	LERC	Pian, T. H.	NAG 3-33	3137
46	MASS INST OF TECH	Rohde, J. E.	LERC	Epstein, A. H.	NAG 3-335	3145
46	MASS INST OF TECH	Wood, J. C.	LERC	Heywood, J. B.	NAG 3-394	3149
46	MASS INST OF TECH	Presler, A. F.	LERC	Sanchez, M. M.	NAG 3-513	3151
46	MASS INST OF TECH	Juhasz, A. J.	LERC	Louis, J. F.	NAG 3-558	3152
46	MASS INST OF TECH	Wilmer, G.	MSFC	Sanchez, M. M.	NAS 8-35018	3228
46	MICHIGAN TECH UNIV	Schock, H. J.	LERC	Vilman, C.	NAG 3-326	3341
46	MICHIGAN TECH UNIV	Coy, J. J.	LERC	Passerello, C. E.	NAG 3-344	3342
46	MICHIGAN TECH UNIV	Lee, C.	LERC	Vilman, C.	NAG 3-456	3343
46	MISSISSIPPI STATE U	Owens, F. C.	HQ-LB	Ingels, F.	NGT 25-001-802	3485
46	NO CAR A&T STATE U	Nowak, R. J.	LARC	Goswami, D. Y.	NAG 1-408	3972
46	NO CAROLINA STATE U	Fleming, D. P.	LERC	David, J. W.	NAG 3-611	3994
46	NORTHWESTERN UNIV	Coy, J. J.	LERC	Cheng, H. S.	NAG 3-345	2520
46	OHIO STATE UNIV	Coy, J. J.	LERC	Houser, D. R.	NAG 3-541	4173
46	OKLAHOMA STATE UNIV	Holderman, J. D.	LERC	Lilley, D. G.	NAG 3-74	4279
46	OLD DOMINION UNIV	Garrett, L. B.	LARC	Thornton, E. A.	NAG 1-257	4923
46	OLD DOMINION UNIV	Walz, J. F.	LARC	Mei, C.	NAG 1-301	4925
46	OLD DOMINION UNIV	Bostic, S. W.	LARC	Razzag, Z.	NAG 1-438	4937
46	OLD DOMINION UNIV	Newman, J. C., Jr.	LARC	Goglia, G. L.	NAG 1-529	4944
46	OLD DOMINION UNIV	Gilreath, M. C.	LARC	Zaman, A. J.	NAG 1-611	4952
46	OREGON STATE UNIV	Brinton, H. C.	HQ-EL	Barnes, J. R.	NAGW 727	4308
46	PENN STATE U-UNIV PK	Horstman, C. C.	ARC	Settles, G. S.	NCA 2-49	4408
46	PENN STATE U-UNIV PK	Horstman, C. C.	ARC	Settles, G. S.	NCA 2-589502	4411
46	PENN STATE U-UNIV PK	Bement, L. J.	LARC	Neubert, V. H.	NAG 1-543	4370
46	PENN STATE U-UNIV PK	Tacina, R. R.	LERC	Faeth, G. M.	NAG 3-190	4371
46	PENN STATE U-UNIV PK	Bulzan, D. L.	LERC	Santavicca, D. A.	NCC 3-51	4414
46	PENN STATE U-UNIV PK	Wilmer, G., Jr.	MSFC	Billet, M. L.	NAS 8-34535	4400
46	PURDUE UNIVERSITY	Johnson, W. S.	LARC	Hillberry, B. M.	NAG 1-231	2658
46	PURDUE UNIVERSITY	Straight, D. M.	LERC	Murthy, S. N.	NAG 3-281	2673

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46	PURDUE UNIVERSITY	Lyons, V. J.	LERC	Laurendeau, N. M.	NAG 3-351	2674
46	PURDUE UNIVERSITY	Van Overbeke, T.	LERC	Stevenson, W. H.	NAG 3-502	2681
46	PURDUE UNIVERSITY	Rivera, J. C.	LERC	Lefebvre, A. F.	NAG 3-552	2682
46	RENSSELAER POLY-NY	Jones, W. R., Jr.	LERC	Lauer, J. L.	NAG 3-222	3854
46	ROSE-HULMAN INST TEC	Brown, G. V.	LERC	North, C. M., Jr.	NAG 3-489	2717
46	SOUTHERN METHODIST U	Brooks, T. F.	LARC	Simpson, R. L.	NAG 1-317	4613
46	STANFORD UNIVERSITY	Driver, D. M.	ARC	Johnston, J. P.	NCA 2-11	1556
46	STANFORD UNIVERSITY	Leonard, A.	ARC	Ferziger, J. H.	NCA 2-41	1563
46	STANFORD UNIVERSITY	Moin, P.	ARC	Reynolds, W. C.	NCA 2-58	1567
46	STANFORD UNIVERSITY	Johnson, D. A.	ARC	Eaton, J. K.	NCC 2-238	1622
46	STANFORD UNIVERSITY	Barker, L. K.	LARC	Cannon, R. H., Jr.	NAG 1-322	1489
46	STANFORD UNIVERSITY	Drummond, J. P.	LARC	Ferziger, J. H.	NAG 1-532	1492
46	STANFORD UNIVERSITY	Gaugler, R. E.	LERC	Johnston, J. P.	NAG 3-3	1508
46	STANFORD UNIVERSITY	Rohde, J. E.	LERC	Moffat, R. J.	NAG 3-522	1514
46	STATE UNIV NY-BUFFAL	Owens, F. C.	HQ-LB	Inman, D. J.	NGT 33-183-801	3907
46	STATE UNIV NY-BUFFAL	Owens, F. C.	HQ-LB	Inman, D. J.	NGT 33-183-802	3908
46	STATE U NY-STONY BRK	Owens, F. C.	HQ-LB	Berlad, A. L.	NGT 33-015-801	3931
46	SYRACUSE UNIVERSITY			Legraff, J. E.	NAG 3-621	3946
46	TENNESSEE STATE UNIV	Montegani, F.	LERC	Malkani, M. J.	NAG 3-458	4514
46	TENNESSEE STATE UNIV	Allen, H.	LERC	Malkani, M. J.	NAG 3-561	4515
46	TEXAS A&M UNIVERSITY	Hendricks, R. C.	LERC	Childs, D. W.	NAG 3-181	4625
46	TEXAS A&M UNIVERSITY	Garcia, F. F.	MSFC	McDermott, M.	NAS 8-33716	4642
46	TEXAS A&M UNIVERSITY	Fox, T. W.	MSFC	Childs, D. W.	NAS 8-34505	4643
46	TEXAS A&M UNIVERSITY	Garcia, F. F.	MSFC	Childs, D.	NAS 8-35824	4648
46	TEXAS A&M UNIVERSITY	Garcia, F. F.	MSFC	Rhode, P. L.	NAS 8-36161	4650
46	TEXAS A&M UNIVERSITY	Owens, F. C.	HQ-LB	Ostowari, C.	NGT 44-001-803	4670
46	TUSKEGEE INSTITUTE	Montegani, F.	LERC	Harris, V. G.	NAG 3-459	1034
46	TUSKEGEE INSTITUTE	Owens, F. C.	HQ-LB	Jeelani, S.	NGT 01-005-751	1046
46	UNIV OF AKRON	Chamis, C. C.	LERC	Padovan, J.	NAG 3-54	4201
46	UNIV OF AKRON	Lewicki, D. G.	LERC	Savage, M.	NAG 3-55	4202
46	UNIV OF AKRON	McDonald, G.	LERC	Padovan, J.	NAG 3-265	4203
46	UNIV OF AKRON	Aydelott, J. C.	LERC	Hochstein, J. I.	NAG 3-318	4206
46	UNIV ALA-HUNTSVILLE	Owens, F. C.	HQ-LE	Wu, S. T.	NGT 01-008-803	1102
46	UNIV ALA-UNIVERSITY	Fox, T. H.	MSFC	Youngblood, J. N.	NAG 8-34	1103
46	UNIV OF ARIZONA			Glezer, A.	NGT 03-002-809	1296
46	UNIV ARKANSAS-FAYETV	Gaugler, R. E.	LERC	Wills, L. D.	NAG 3-583	1309
46	UNIV CALIF-BERKELEY	Chapman, G. T.	ARC	Holt, M.	NCA 2-37	1714
46	UNIV CALIF-BERKELEY	Schock, H. J.	LERC	Oppenheim, A. K.	NAG 3-137	1668
46	UNIV CALIF-BERKELEY	Owens, F. C.	HQ-LB	Auslander, D. M.	NGT 05-003-801	1744
46	UNIV CALIF-IRVINE	Tacina, R. R.	LERC	Elghobashi, S.	NAG 3-176	1776
46	UNIV CALIF-L ANGELES	Kittel, P.	ARC	Frederking, T. H.	NAG 2-353	1804
46	UNIV OF CENTRAL FLA	Fedor, O. H.	KSC	Anderson, L. A.	NAG10-11	2347
46	UNIV OF CENTRAL FLA	Koning, R.	KSC	Khattar, M. K.	NAS10-10686	2351
46	UNIV OF CINCINNATI	Oswald, F. B.	LERC	Huston, R. L.	NSG 3188	4240
46	UNIV OF CONNECTICUT	Marek, C. J.	LERC	Bennett, J. C.	NAG 3-350	2222
46	UNIV OF CONNECTICUT	Goldman, L. J.	LERC	Langston, L. S.	NSG 3238	2225
46	UNIV OF DAYTON	Kiefling, L.	MSFC	Drake, M. L.	NAS 8-34682	4249
46	UNIV OF DELAWARE	Whitcomb, J. D.	LARC	Gillespie, J. W., Jr.	NAG 1-475	2244
46	UNIV OF FLORIDA	Schock, H. J.	LERC	Shih, T. I.	NAG 3-363	2359
46	UNIV OF FLORIDA	Carter, C. H.	HQ-LB	Tesar, D.	NGT 10-005-802	2379
46	UNIV OF FLORIDA	Owens, F. C.	HQ-LB	Tesar, D.	NGT 10-005-804	2380
46	UNIV HOUSTON-HOUSTON	Heyman, J. S.	LARC	Salama, K.	NAG 1-388	4680
46	UNIV HOUSTON-HOUSTON	Vernon, R. W.	LERC	Lienhard, J. H.	NAG 3-537	4685
46	UNIV HOUSTON-HOUSTON	Owens, F. C.	HQ-LE	Hussain, A. F.	NGT 44-005-808	4713
46	UNIV HOUSTON-HOUSTON	Owens, F. C.	HQ-LE	Hussain, A. K.	NGT 44-005-809	4714
46	UNIV HOUSTON-HOUSTON	Owens, F. C.	HQ-LB	Hussain, A. K.	NGT 44-005-806	4711
46	UNIV ILLINOIS-CHICGO	Handschuh, R. F.	LERC	Litvin, F. L.	NAG 3-48	2595
46	UNIV ILLINOIS-CHICGO	Handschuh, R. F.	LERC	Litvin, F. L.	NAG 3-655	2596
46	UNIV ILLINOIS-URBANA	Sacksteder, K. R.	LERC	Strehlow, R. A.	NCC 3-35	2632
46	UNIV OF KANSAS	Ault, L. A.	HQ-LG	Barr, B. G.	NASW 3438	2808

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46	UNIV MARYLAND-COL PK	Rodriguez, G. E.	GSFC	Kirk, J. A.	NAG 5-396	2958
46	UNIV MARYLAND-COL PK	Purves, L. R.	GSFC	Walston, W. H.	NCC 5-33	3015
46	UNIV MARYLAND-COL PK	Hunt, L. R.	LARC	Jones, E.	NAG 1-473	2933
46	UNIV MICH-ANN ARBOR	Wedeven, L. D.	LARC	Ludema, K. C.	NAG 3-494	3366
46	UNIV MICH-ANN ARBOR	Bittker, D.	LERC	Radhakrishnan, K.	NAG 3-294	3363
46	UNIV MICH-ANN ARBOR	Miller, C. D.	LERC	Merte, H. , Jr.	NAG 3-589	3367
46	UNIV MICH-ANN ARBOR	Salzman, J. A.	LERC	Merte, H., Jr.	NAG 3-663	3369
46	U MINN-MNPLS-ST PAUL	Gaugler, R. E.	LERC	Simon, T. W.	NAG 3-286	3440
46	U MINN-MNPLS-ST PAUL	Van Fossen, G.	LERC	Patankar, S. V.	NAG 3-579	3441
46	UNIV MISS-UNIVERSITY	Sutton, K.	LARC	Horton, T. E.	NAG 1-496	3489
46	UNIV MO-ROLLA	Johnson, W. S.	LARC	Mall, S.	NAG 1-425	3507
46	UNIV OF SANTA CLARA	Clark, J. S.	LERC	Pefley, R. K.	NAG 3-143	2043
46	UNIV OF SOUTHERN CAL	Bogue, R. K.	ARC	Temes, G. C.	NAG 2-360	2067
46	UNIV TENNESSEE-KNOXV	Oldenburg, J. R.	LERC	Peters, C. E.	NAG 3-370	4529
46	UNIV TEXAS-AUSTIN	Kiefling, L.	MSFC	Craig, R. R.	NAS 8-35338	4756
46	UNIV OF TOLEDO	Vanoverbeke, T.	LERC	Keith, T. G.	NAG 3-355	4258
46	UNIV OF TOLEDO	Gaugler, R. E.	LERC	Jeng, D. R.	NAG 3-452	4261
46	UNIV OF VIRGINIA	Horner, G. C.	LARC	Haviland, J. K.	NAG 1-349	4986
46	UNIV OF VIRGINIA	Kascak, A. F.	LERC	Allaire, P. E.	NAG 3-180	4995
46	UNIV OF WASHINGTON	Pittman, C. M.	LARC	Emery, A. F.	NAG 1-41	5100
46	UNIV OF WASHINGTON	Strom, T. N.	LERC	Wolak, J.	NAG 3-7	5107
46	UNIV OF WASHINGTON	Bittker, D.	LERC	Pratt, D. T.	NAG 3-525	5109
46	UNIV WISC-MADISON	Kittel, P.	ARC	Vansciver, S. W.	NAG 2-358	5181
46	UNIV WISC-MADISON	Simon, F. F.	LERC	Borman, G. L.	NAG 3-274	5182
46	UNIV WISC-MILWAUKEE	Vanoverbeke, T.	LERC	Amano, R. S.	NAG 3-546	5243
46	UNIV WISC-PARKSIDE	Mah, R. W.	ARC	Feldt, W. T.	NCC 2-279	5247
46	UTAH STATE UNIV	Marmolejo, J.	JSC	Bingham, G. E.	NAS 9-17484	4855
46	VIRGINIA POLY INST	Johnson, W. S.	LARC	Post, D.	NAG 1-227	5039
46	VIRGINIA POLY INST	Chestnutt, D.	LARC	Mahan, J. R.	NAG 1-493	5056
46	VIRGINIA POLY INST	Deloach, R.	LARC	O'brien, W. F.	NAG 1-547	5060
46	VIRGINIA POLY INST	Horner, G. C.	LARC	Robertshaw, H. H.	NAG 1-570	5062
46	WASHINGTON UNIVERSTY	Aydelott, J. C.	LERC	Hochstein, J. I.	NAG 3-578	3520
46	WASHINGTON UNIVERSTY	Owens, F. C.	HQ-LE	Hahn, H. T.	NGT 26-010-801	3543
46	WEST VIRGINIA UNIV	Robinson, J. C.	LARC	Tamma, K. K.	NAG 1-571	5167
47	ALFRED UNIVERSITY	Goldstein, H. E.	ARC	Varner, J.	NCA 2-71	3687
47	ARIZONA STATE UNIV	Brewer, W. D.	LARC	Cowley, J. M.	NAG 1-426	1126
47	ARIZONA STATE UNIV	Brewer, W. D.	LARC	Nutt, S. R.	NAG 1-540	1127
47	JOHNS HOPKINS UNIV	Heyman, J. S.	LARC	Green, R. E., Jr.	NAG 1-211	2883
47	JOHNS HOPKINS UNIV	Lisagor, W. B.	LARC	Shechtman, D.	NAG 1-399	2884
47	JOHNS HOPKINS UNIV	Owens, F. C.	HQ-LB	Green, R.	NGT 21-001-802	2918
47	BROWN UNIVERSITY	Browne, I. D.	JSC	Hess, P. C.	NAG 9-109	4466
47	CALIF INST OF TECH	Browne, I. D.	JSC	Burnett, D. S.	NAG 9-94	1331
47	CALIF INST OF TECH	Crews, J. H., Jr.	LARC	Knauss, W. G.	NAG 1-474	1312
47	CARNEGIE-MELLON UNIV	Rush, H. F.	LARC	Bhat, G. K.	NAS 1-17216	4332
47	CARNEGIE-MELLON UNIV	Dreshfield, R. L.	LERC	Thompson, A. W.	NAG 3-463	4330
47	CASE WESTERN RESERVE	Gray, H. R.	LERC	Ebert, L. J.	NAG 3-30	4033
47	CASE WESTERN RESERVE	Miner, R. V.	LERC	Welsch, G. E.	NAG 3-218	4038
47	CASE WESTERN RESERVE	Gross, B.	LERC	Chudnovsky, A.	NAG 3-223	4040
47	CASE WESTERN RESERVE	Dreshfield, R. L.	LERC	Wallace, J. F.	NAG 3-268	4046
47	CASE WESTERN RESERVE	Marinos, C.	LERC	Hehemann, R. F.	NAG 3-279	4048
47	CASE WESTERN RESERVE	Kiraly, L. J.	LERC	Halloran, J. W.	NAG 3-287	4049
47	CASE WESTERN RESERVE	Smialek, J. L.	LERC	Halloran, J. W.	NAG 3-324	4053
47	CASE WESTERN RESERVE	Halford, G. R.	LERC	Manson, S. S.	NAG 3-337	4055
47	CASE WESTERN RESERVE	Titran, R. H.	LERC	Vedula, K. M.	NAG 3-387	4059
47	CASE WESTERN RESERVE	Gray, H. R.	LERC	Laxmanan, V.	NAG 3-417	4065
47	CASE WESTERN RESERVE	Hurwitz, F. I.	LERC	Litt, M.	NAG 3-446	4068
47	CASE WESTERN RESERVE	Levine, S. R.	LERC	Wallace, J. F.	NAG 3-464	4070
47	CASE WESTERN RESERVE	Freedman, M. R.	LERC	Feke, D. L.	NAG 3-468	4072
47	CASE WESTERN RESERVE	Stearns, C. A.	LERC	Mitchell, T. E.	NAG 3-498	4079
47	CASE WESTERN RESERVE	Halford, G. R.	LERC	Manson, S. S.	NAG 3-553	4082

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
47	CASE WESTERN RESERVE	Nathal, M. V.	LERC	Vedula, K. M.	NAG 3-563	4085
47	CASE WESTERN RESERVE	Gray, H. R.	LERC	Ebert, L. J.	NSG 3246	4118
47	CASE WESTERN RESERVE	Owens, F. C.	HQ-LE	Mitchell, T. E.	NGT 36-027-807	4115
47	CATHOLIC UNIVERSITY	Alterescu, S.	GSFC	Barkatt, A. A.	NAS 5-28586	2258
47	CLARKSON UNIVERSITY	Fripp, A. L.	LARC	Carlson, F. M.	NAG 1-397	3703
47	CLARKSON UNIVERSITY	Reeves, F. A.	MSFC	Wilcox, W. R.	NAS 8-34887	3708
47	CLEMSON UNIV-CLEMSON	Farley, G. L.	LARC	Kennedy, J. M.	NCC 1-93	4497
47	CLEVELAND STATE UNIV	Klima, S. J.	LERC	Hemann, J. H.	NCC 3-24	4144
47	CLEVELAND STATE UNIV	Miller, R. A.	LERC	Nixon, D. A.	NCC 3-27	4145
47	CLEVELAND STATE UNIV	Orange, T. W.	LERC	Hemann, J.	NCC 3-46	4147
47	COLORADO STATE UNIV	Nelson, H. G.	ARC	Spain, I. L.	NAG 2-157	2087
47	COLUMBIA UNIVERSITY	Scheuermann, C. M.	LERC	Tien, J. K.	NAG 3-57	3720
47	COLUMBIA UNIVERSITY	Petrasek, D. W.	LERC	Tien, J. K.	NAG 3-410	3721
47	CORNELL UNIVERSITY	Nelson, H. G.	ARC	Ruoff, A. L.	NAG 2-158	3759
47	DARTMOUTH COLLEGE	Strom, T. N.	LERC	Kennedy, F. E., Jr.	NSG 3253	3579
47	DREXEL UNIVERSITY	Poe, C. C., Jr.	LARC	Awerbuch, J.	NSG 1606	4350
47	GEORGE WASHINGTON U	Elber, W.	LARC	Liebowitz, H.	NAG 1-158	2262
47	GEORGE WASHINGTON U	Swann, R. T.	LARC	Liebowitz, H.	NCC 1-36	2281
47	GEORGE WASHINGTON U	Westfall, L. J.	LERC	Hobbs, H. H.	NAG 3-642	2270
47	GEORGIA INST OF TECH	O'brien, T. K.	LARC	Rehfield, L. W.	NAG 1-558	2415
47	GEORGIA INST OF TECH	Bill, R. C.	LERC	Antolovich, S. D.	NAG 3-503	2424
47	GEORGIA INST OF TECH	Johnston, M. H.	MSFC	Johnson, J. W.	NAS 8-35985	2445
47	ILL INST OF TECH	Glasgow, T. K.	LERC	Nash, P. G.	NAG 3-409	2513
47	IOWA STATE UNIV	Browne, I. D.	JSC	Kracher, A.	NAG 9-112	2742
47	LEHIGH UNIVERSITY	Browne, I. D.	JSC	Goldstein, J. I.	NAG 9-45	4357
47	MASS INST OF TECH	Browne, I. D.	JSC	Prinn, R. G.	NAG 9-108	3185
47	MASS INST OF TECH	Barrow, B. J.	LERC	Pelloux, R. M.	NAG 3-280	3141
47	MASS INST OF TECH	Dutta, S.	LERC	Haggerty, J. S.	NAG 3-312	3143
47	MASS INST OF TECH	Vary, A.	LERC	Williams, J. H., Jr.	NAG 3-328	3144
47	MASS INST OF TECH	Glasgow, T. K.	LERC	Szekely, J.	NAG 3-365	3146
47	MASS INST OF TECH	Harf, F.	LERC	Szekely, J.	NAG 3-594	3153
47	MASS INST OF TECH	Harf, F.	LERC	Flemings, M. C.	NAG 3-597	3154
47	MASS INST OF TECH	Harf, F.	LERC	Szekely, J.	NAS 3-24620	3208
47	MASS INST OF TECH	Winsa, E. A.	LERC	Szekely, J.	NAS 3-24642	3209
47	MASS INST OF TECH	Weinberg, I.	LERC	Gatos, H. C.	NSG 3017	3265
47	MASS INST OF TECH	Oran, W. A.	HQ-EN	Bowen, K.	NSG 7645	3277
47	MICHIGAN STATE UNIV	McGaw, M. A.	LERC	Martin, J. F.	NAG 3-453	3324
47	MICHIGAN TECH UNIV	Gedwill, M. A.	LERC	Heckel, R. W.	NAG 3-244	3340
47	MICHIGAN TECH UNIV	Dreshfield, R. L.	LERC	Hellawell, A.	NAG 3-560	3346
47	MISSISSIPPI STATE U	Nichols, R. L.	MSFC	Hall, W. B.	NAG 8-545	3476
47	NO CAR A&T STATE U	Dicus, D. L.	LARC	Avva, V. S.	NAG 1-404	3968
47	NO CAROLINA STATE U	Wakelyn, N. T.	LARC	Theil, M. H.	NAG 1-525	3990
47	NO CAROLINA STATE U	Black, R. E.	MSFC	Koch, C. C.	NAG 8-475	3996
47	NORTHWESTERN UNIV	Englund, D. R.	LERC	Brittain, J. O.	NAG 3-501	2522
47	OHIO STATE UNIV	Bozek, J.	LERC	Albright, C. E.	NAG 3-448	4170
47	OHIO STATE UNIV	Yates, I. C.	MSFC	Stroud, D. G.	NAG 8-483	4177
47	OLD DOMINION UNIV	Walker, G. H.	LARC	Heinbockel, J. H.	NAG 1-148	4920
47	OLD DOMINION UNIV	Illg, W.	LARC	Goglia, G. L.	NAG 1-196	4921
47	OLD DOMINION UNIV	Elber, W.	LARC	Prabhakaran, R.	NAG 1-528	4943
47	PENN STATE U-UNIV PK	Leese, G.	LERC	Zamrik, S. Y.	NAG 3-264	4372
47	PENN STATE U-UNIV PK	Miller, R. A.	LERC	Ryba, E.	NAG 3-628	4376
47	PRAIRIE VIEW A&M U	Leger, L.	JSC	Wang, F. C.	NAS 9-17406	4580
47	PRINCETON UNIVERSITY	Chai, A.	LERC	Saville, D. A.	NAG 3-447	3619
47	PURDUE UNIVERSITY	Newman, J. C., Jr.	LARC	Grandt, A. F., Jr.	NAG 1-321	2661
47	PURDUE UNIVERSITY	Scheuermann, C. M.	LERC	Radavich, J. F.	NAG 3-59	2669
47	PURDUE UNIVERSITY	Bowles, K. A.	LERC	Caruthers, J. M.	NAG 3-599	2685
47	RENSSELAER POLY-NY	Johnston, N. J.	LARC	Sternstein, S. S.	NAG 1-253	3848
47	RENSSELAER POLY-NY	Harf, F. H.	LERC	Glicksman, M. E.	NAG 3-333	3856
47	RENSSELAER POLY-NY	Schaefer, D. A.	MSFC	Wiedemier, H.	NAS 8-32936	3863
47	RICE UNIVERSITY	MacKey, A. C.	JSC	Akin, J. E.	NAG 9-119	4587



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47	RICE UNIVERSITY	Parker, R. A.	JSC	Dufour, R. J.	NAG 9-123	4588
47	RICE UNIVERSITY	Fallon, R. A.	MSFC	Margrave, J. L.	NAS 8-33199	4596
47	SAN JOSE STATE UNIV	Riccitiello, S. R.	ARC	Anderson, R. N.	NCC 2-3	1459
47	SAN JOSE STATE UNIV	Nelson, H. G.	ARC	Pizzo, P. P.	NCC 2-155	1468
47	SAN JOSE STATE UNIV	Riccitiello, S. R.	ARC	Anderson, R. N.	NCC 2-195	1471
47	STANFORD UNIVERSITY	Poppa, H.	ARC	Bates, C. W., Jr.	NCA 2-745409	1592
47	STANFORD UNIVERSITY	Goebel, J. H.	ARC	Feigelson, R. S.	NCC 2-222	1620
47	STANFORD UNIVERSITY	Nelson, H. G.	ARC	Springer, G. S.	NCC 2-304	1630
47	STANFORD UNIVERSITY	Whittenberger, J. D.	LERC	Nix, W. D.	NAG 3-248	1510
47	STANFORD UNIVERSITY	Fogle, V.	MSFC	Feigelson, R. S.	NAG 8-489	1521
47	STANFORD UNIVERSITY	Fogle, V.	MSFC	Ferguson, R. S.	NAS 8-34872	1548
47	SYRACUSE UNIVERSITY	Telesman, J.	LERC	Liu, H. W.	NAG 3-348	3945
47	TEXAS A&M UNIVERSITY	Crews, J. H., Jr.	LARC	Bradley, W. L.	NAG 1-443	4623
47	TEXAS A&M UNIVERSITY	Serafina, T. T.	LERC	Lee, S. W.	NAG 3-129	4624
47	TEXAS A&M UNIVERSITY	Whittenberger, J. D.	LERC	Wolfenden, A.	NAG 3-314	4628
47	TUSKEGEE INSTITUTE	Johnson, W. S.	LARC	Dillon, I. G.	NAG 1-447	1032
47	TUSKEGEE INSTITUTE	Penn, B. G.	MSFC	Jeelani, S.	NAG 8-38	1037
47	TUSKEGEE INSTITUTE	Randall, J. L.	MSFC	Jeelani, S.	NAG 8-44	1040
47	UNIV ALA-BIRMINGHAM	Rowe, R. R.	MSFC	Thompson, R. G.	NAS 8-34962	1050
47	UNIV ALA-HUNTSVILLE	Bass, B. G.	MSFC	Hendrieks, J. B.	NAS 8-33542	1070
47	UNIV ALA-HUNTSVILLE	McClure, J. C.	MSFC	Davis, J. H.	NAS 8-33811	1073
47	UNIV ALA-HUNTSVILLE	Ethridge, E. C.	MSFC	Workman, G.	NAS 8-35978	1089
47	UNIV ALA-UNIVERSITY	Mixon, W. R.	MSFC	Stefanesou, D. M.	NAG 8-469	1104
47	UNIV ALA-UNIVERSITY	Reeves, F. A.	MSFC	Stefanescu, D. M.	NAS 8-34724	1106
47	UNIV OF ARIZONA	Kessler, D.	JSC	Zaman, A. J.	NAG 9-122	1216
47	UNIV OF ARIZONA	Ensign, C. R.	LERC	Eiseman, P. R.	NAG 3-41	1190
47	UNIV CALIF-L ANGELES	Holanda, R.	LERC	Bunshah, R. F.	NAG 3-451	1807
47	UNIV CALIF-S BARBARA	Nelson, H. G.	ARC	Shanabarger, M. R.	NCC 2-63	2001
47	UNIV OF CINCINNATI	Miner, R. V.	LERC	Jayaraman, N.	NAG 3-506	4227
47	UNIV OF CINCINNATI	Leon, R. P.	LERC	Mantei, T. D.	NAG 3-646	4232
47	UNIV OF CONNECTICUT	Stephens, J. R.	LERC	Nowotny, H.	NAG 3-271	2220
47	UNIV OF DAYTON	Lark, R. L.	LERC	Emery, S. A.	DEN 3-286	4241
47	UNIV OF DAYTON	Orange, T. W.	LERC	Gallagher, J. P.	NAG 3-246	4244
47	UNIV OF DELAWARE	Dexter, H. B.	ARC	Pipes, R. B.	NAG 1-378	2243
47	UNIV HOUSTON-HOUSTON	Cantrell, J. H., Jr.	LARC	Salama, K.	NCC 1-88	4703
47	UNIV HOUSTON-HOUSTON	Fogle, V.	MSFC	Chu, C. W.	NAS 8-35161	4695
47	UNIV ILLINOIS-CHICGO	Browne, I. D.	JSC	Davis, A. M.	NAG 9-111	2597
47	UNIV ILLINOIS-URBANA	Johnston, N. J.	LARC	Wang, S. S.	NAG 1-286	2600
47	UNIV ILLINOIS-URBANA	Dreshfield, R. L.	LERC	Fraser, H. L.	NAG 3-325	2609
47	UNIV ILLINOIS-URBANA	Leese, G. E.	LERC	Socie, D. F.	NAG 3-465	2613
47	UNIV ILLINOIS-URBANA	Marinos, C.	LERC	Brown, S. D.	NAG 3-495	2615
47	UNIV MICH-ANN ARBOR	Johnston, N. J.	LARC	Yee, A. F.	NAG 1-607	3356
47	UNIV MICH-ANN ARBOR	Kinard, W. H.	LARC	Felbeck, D. K.	NAS 1-17008	3394
47	U MINN-MNPLS-ST PAUL	Browne, I. D.	JSC	Nier, A. O.	NAG 9-110	3452
47	U MINN-MNPLS-ST PAUL	Crews, J. H.	LARC	Hsiao, C. C.	NAG 1-278	3435
47	UNIV MO-ROLLA	Munafa, P. M.	MSFC	Leighly, H. P.	NAS 8-35325	3511
47	UNIV OF NOTRE DAME	Matus, L. G.	LERC	Zeller, M. V.	NAG 3-428	2719
47	UNIV OF PITTSBURGH	Owens, F. C.	HQ-LB	Pettit, F.	NGT 39-010-800	4457
47	UNIV OF SANTA CLARA	Lincoln, K. A.	ARC	Yang, C. Y.	NCA 2-685501	2053
47	UNIV SO CAROLINA-COL	Owens, F. C.	HQ-LB	Peters, W. H.	NGT 41-002-800	4502
47	UNIV TEXAS-AUSTIN	Crews, J.	JSC	Yew, C. H.	NAG 9-114	4746
47	UNIV TEXAS-AUSTIN	Owens, F. C.	HQ-LB	Kyriakides, S.	NGT 44-012-801	4770
47	UNIV OF TORONTO	Baker, D. J.	LARC	Tennyson, R. C.	NSG 7409	5269
47	UNIV OF UTAH	Fripp, A. L.	LARC	Rosenberger, F. E.	NSG 1534	4841
47	UNIV OF VIRGINIA	Fripp, A. L.	ARC	Jesser, W. A.	NAG 1-350	4987
47	UNIV OF VIRGINIA	Outlaw, R. A.	LARC	Jesser, W. A.	NAG 1-371	4988
47	UNIV OF WASHINGTON	Goldstein, H. E.	ARC	Mueller, J. I.	NAG 2-120	5104
47	UNIV OF WASHINGTON	Lancashire, R. B.	LERC	Miller, A. D.	NAG 3-569	5110
47	UNIV OF WASHINGTON	Bersch, C. F.	HQ-RT	Mueller, J. I.	NAGW 199	5128
47	UNIV WISC-MADISON	Gray, H. R.	LERC	Perepezko, J. H.	NAG 3-436	5183

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47	UNIV OF WYOMING	Johnston, N. J.	LARC	Zimmerman, R. S.	NAG 1-277	5249
47	UNIV OF WYOMING	Crews, J. H., Jr.	LARC	Walrath, D. E.	NAG 1-454	5251
47	VANDERBILT UNIVERSTY	Nichols, R. L.	MSFC	Kinser, D. L.	NAS 8-32695	4556
47	VANDERBILT UNIVERSTY	Gardner, L. B.	MSFC	Bayuzick, R. J.	NAS 8-34676	4557
47	VANDERBILT UNIVERSTY	Owens, F. C.	HQ-LB	Bayuzick, R. J.	NGT 43-002-800	4560
47	VIRGINIA POLY INST	Nelson, H. G.	ARC	Brinson, H. F.	NCC 2-71	5086
47	VIRGINIA POLY INST	Tenney, D. R.	LARC	Torgersen, P. E.	NAG 1-343	5044
47	VIRGINIA POLY INST	Vary, A.	LERC	Henneke, E. G.	NAG 3-172	5067
47	VIRGINIA POLY INST	Vary, A.	LERC	Henneke, E. G., II	NAG 3-323	5071
47	VIRGINIA POLY INST	Orange, T. W.	LERC	Dowling, N. E.	NAG 3-438	5074
47	YALE UNIVERSITY	Browne, I. D.	JSC	Longhi, J.	NAG 9-93	2230
49	ARIZONA STATE UNIV	Carney, M. J.	LERC	Neitzel, G. P.	NAG 3-568	1137
49	JOHNS HOPKINS UNIV	Middleton, E. M.	GSFC	Gaward, S.	NCC 5-24	2916
49	AUBURN UNIV-AUBURN	Martin, C. L.	MSFC	Sforzini, R. H.	NAS 8-36147	1023
49	AUBURN UNIV-AUBURN	Faile, G. C.	MSFC	Foster, W. A., Jr.	NAS 8-36288	1025
49	BOSTON UNIVERSITY	Owens, F. C.	HQ-LB	Phillips, T. G.	NGT 22-004-806	3063
49	BOWIE STATE COLLEGE	Mundy, J. R.	GSFC	Ponds, J. W.	NCA 5-96	2879
49	CALIF INST OF TECH	Owens, F. C.	HQ-LB	Albee, A. L.	NGT 05-003-790	1375
49	CARNEGIE-MELLON UNIV	Sacksteder, K. R.	LERC	Sirignano, W. A.	NAG 3-404	4328
49	CASE WESTERN RESERVE	Cicolani, L. S.	ARC	Martin, C.	NAG 2-82	4029
49	CASE WESTERN RESERVE	Meyers, J. F., Jr.	LARC	Edwards, R. V.	NAG 1-328	4028
49	CASE WESTERN RESERVE	Seasholtz, R. G.	LERC	Edwards, R. V.	NAG 3-247	4044
49	CASE WESTERN RESERVE	Agvilar, K. E.	LERC	Boulding, M. E.	NAG 3-406	4063
49	CASE WESTERN RESERVE	Lehtinen, B.	LERC	Buchner, M.	NAG 3-454	4069
49	CASE WESTERN RESERVE	Sarsfield, L. P.	LERC	Ostrach, S.	NAG 3-480	4074
49	CASE WESTERN RESERVE	Sarsfield, L.	LERC	Kamotani, T.	NAG 3-497	4078
49	CASE WESTERN RESERVE	Chai, A. T.	LERC	Kamotani, Y.	NAG 3-567	4086
49	CASE WESTERN RESERVE	Jacobson, T. P.	LERC	Ostrach, S.	NAG 3-570	4087
49	CASE WESTERN RESERVE	Shannon, J. L., Jr.	LERC	Wright, D. K., Jr.	NAS 3-23683	4098
49	CASE WESTERN RESERVE	Montegani, F. J.	LERC	McKeon, T. J.	NCC 3-42	4104
49	CASE WESTERN RESERVE	Owens, F. C.	HQ-LB	Prahl, J. M.	NGT 36-027-011	4107
49	CLEVELAND STATE UNIV	Loomis, W. R.	LERC	Gorla, R. S.	NCC 3-21	4142
49	COLORADO STATE UNIV	Harnage, M. J., Jr.	JSC	Phillips, R. W.	NAS 9-17168	2103
49	CORNELL UNIVERSITY	Owens, F. C.	HQ-LB	Philpot, W. D.	NGT 33-010-800	3805
49	CUYAHOGA COMMUNITY C	Aguilar, K. E.	LERC	Serna, A.	NAG 3-313	4149
49	DE ANZA COLLEGE	Lum, H.	ARC	Frederick, V.	NCC 2-31	1409
49	GEORGE WASHINGTON U	Morakis, J. C.	GSFC	Helgert, H. J.	NSG 5109	2289
49	GEORGE WASHINGTON U	Wells, J. G.	LARC	Lang, R. A.	NCC 1-85	2284
49	GEORGE WASHINGTON U	Owens, F. C.	HQ-LB	Silverman, B. G.	NGT 09-010-800	2287
49	GEORGETOWN UNIV	Morrison, J.	HQ-LI	Krogh, P. F.	NGT 09-009-800	2291
49	GEORGIA INST OF TECH	Webbon, B. W.	ARC	Olson, L. H.	NAG 2-135	2419
49	GEORGIA INST OF TECH	Vykukal, H. C.	ARC	Olson, L. H.	NSG 2356	2450
49	GEORGIA INST OF TECH	Eggers, D. S.	JSC	Cooke, W. P.	NAS 9-17381	2447
49	GEORGIA INST OF TECH	Brown, G. V.	LERC	Larson, A. V.	NAG 3-600	2426
49	HAMPTON INSTITUTE	Hall, J. B., Jr.	LARC	Spencer, J. H.	NAG 1-450	4907
49	HAMPTON INSTITUTE	Owens, F. C.	HQ-LB	Spencer, J. W.	NGT 47-020-800	4912
49	HARVARD UNIVERSITY	Meyer, G.	ARC	Byrnes, C. I.	NSG 2265	3102
49	HOWARD UNIVERSITY	Mundy, J. R.	GSFC	Cox, E. L.	NCA 5-29	2306
49	HOWARD UNIVERSITY	Chapman, J. W.	GSFC	Cox, E. L.	NCA 5-101	2307
49	HOWARD UNIVERSITY	Housner, J. M.	LARC	Broome, T. H., Jr.	NAG 1-290	2292
49	HOWARD UNIVERSITY	Hamer, H. A.	LARC	Bainum, P. M.	NSG 1414	2313
49	ILL INST OF TECH	Miller, W. H.	GSFC	Costello, D. J., Jr.	NAG 5-234	2516
49	JOHN CARROLL UNIV	Baumbick, R. J.	LERC	Carome, E.	NAG 3-366	4150
49	LINCOLN UNIV-PA	Mundy, J. R.	GSFC	Williams, W. W.	NCA 5-98	4367
49	MASS INST OF TECH	Lee, A. T.	ARC	Young, L. R.	NAG 2-12	3120
49	MASS INST OF TECH	Meyer, G.	ARC	Athans, M.	NAG 2-297	3134
49	MASS INST OF TECH	Cicolani, L. S.	ARC	Holt, M.	NGL 22-009-124	3247
49	MASS INST OF TECH	Vento, D. M.	LERC	Wachman, H. Y.	NAG 3-173	3139
49	MORGAN STATE UNIV	Friedman, D. S.	GSFC	Taylor, J. H.	NAS 5-23558	2923
49	MORGAN STATE UNIV	Chapman, J. W.	GSFC	Leigh, P.	NCA 5-105	2925

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
49	MORGAN STATE UNIV	Coleman, A. M.	HQ-U	Proctor, N. K.	NGT 21-025-080	2926
49	NEW MEX ST U-LAS CR	Pincus, R. B.	GSFC	Lawrence, H.	NAS 5-26332	3673
49	NEW MEX ST U-LAS CR	Pincus, B. R.	GSFC	Gilcrease, A.	NAS 5-29149	3676
49	NO CAR A&T STATE U	Junge, M.	ARC	Park, E.	NCA 2-15	3974
49	OHIO STATE UNIV	Jones, C. S.	MSFC	Richardson, R. W.	NAS 8-35595	4183
49	OHIO UNIVERSITY	Sovey, J. S.	LERC	Serafini, J. S.	NAG 3-637	4195
49	OLD DOMINION UNIV	Bush, H. G.	LARC	Razzaq, Z.	NAG 1-336	4928
49	OLD DOMINION UNIV	Wieting, A. R.	LARC	Thornton, E. A.	NSG 1321	4974
49	OLD DOMINION UNIV	Owens, F. C.	HQ-LB	Goglia, G. L.	NGT 47-003-029	4969
49	PRINCETON UNIVERSITY	Wieting, A. R.	LARC	Bogdonoff, S. M.	NAS 1-17247	3633
49	PRINCETON UNIVERSITY	Sacksteder, K.	LERC	Williams, F. A.	NAG 3-380	3618
49	PRINCETON UNIVERSITY	Millard, M. L.	LERC	Russel, W. B.	NAG 3-584	3620
49	PRINCETON UNIVERSITY	Sacksteder, K. R.	LERC	Williams, F. A.	NAS 3-24640	3634
49	PURDUE UNIVERSITY	Oseroff, H.	GSFC	Anuta, P. E.	NAS 5-26859	2698
49	PURDUE UNIVERSITY	Stroud, W. J.	LARC	Sun, C. T.	NAG 1-581	2666
49	RENSSELAER POLY-NY	Connell, E. B.	GSFC	Wozny, M. J.	NAG 5-487	3859
49	RENSSELAER POLY-NY	Aguilar, K. E.	LERC	Reyes, R.	NAG 3-544	3857
49	ROCHESTER INST TECH	Oseroff, H.	GSFC	Schott, J. R.	NAS 5-27323	3868
49	SAN JOSE STATE UNIV	Gilwee, W. J.	ARC	Mayer, L. A.	NAG 2-99	1445
49	SAN JOSE STATE UNIV	Mansfield, J. A.	ARC	Holmstrom, F.	NCC 2-256	1478
49	SAN JOSE STATE UNIV	Mansfield, J. A.	ARC	Holmstrom, F.	NCC 2-299	1482
49	STANFORD UNIVERSITY	Meyer, G.	ARC	Franklin, G. F.	NAG 2-359	1507
49	STANFORD UNIVERSITY	Vykukal, H. C.	ARC	Leifer, L.	NCC 2-295	1628
49	STANFORD UNIVERSITY	Erzberger, H.	ARC	Bryson, A. E.	NGL 05-020-007	1638
49	STANFORD UNIVERSITY	Oliver, B. M.	ARC	Peterson, A. M.	NSG 2121	1655
49	STANFORD UNIVERSITY	Connell, E. B.	GSFC	Banks, P. M.	NCC 5-30	1637
49	STANFORD UNIVERSITY	Owens, F. C.	HQ-LB	Bershader, D.	NGT 05-020-412	1648
49	STANFORD UNIVERSITY	Owens, F. C.	HQ-LB	Bershader, D.	NGT 05-020-808	1653
49	TENNESSEE TECH U	Bullock, T.	MSFC	Tolbert, R. N.	NAS 8-35672	4518
49	TEXAS A&M UNIVERSITY	Stroughal, G.	JSC	Porteiro, J. R.	NAS 9-16443	4653
49	TEXAS A&M UNIVERSITY	Owens, F. C.	HQ-LB	Chilton, R. G.	NGT 44-001-800	4667
49	TEXAS TECH UNIV	Meyer, G.	ARC	Hunt, L. R.	NAG 2-189	4674
49	TEXAS TECH UNIV	Meyer, G.	ARC	Su, R.	NAG 2-203	4675
49	UNIV OF AKRON	Ulbricht, T. E.	LERC	Braun, M. J.	NAG 3-304	4204
49	UNIV ALA-HUNTSVILLE	Quinn, A.	MSFC	Rogers, J. G.	NAG 8-546	1064
49	UNIV ALA-HUNTSVILLE	Owens, F. C.	HQ-LB	Karr, G. R.	NGT 01-008-021	1099
49	UNIV ALA-UNIVERSITY	Owens, F. C.	HQ-LB	Freeman, L. M.	NGT 01-002-099	1108
49	UNIV OF ARIZONA	Melugin, R. K.	ARC	Hillman, D. W.	NAG 2-220	1184
49	UNIV OF ARIZONA	Quaide, W. L.	HQ-EL	Hunter, D. M.	NAGW 546	1237
49	UNIV CALIF-BERKELEY	Meyer, G.	ARC	Sastry, S.	NAG 2-243	1661
49	UNIV CALIF-BERKELEY	Stuart, L. M.	GSFC	Colwell, R. N.	NAS 5-27377	1707
49	UNIV CALIF-BERKELEY	Sackstader, K.	LERC	Pagni, P. J.	NAG 3-443	1670
49	UNIV CALIF-BERKELEY	Weinreb, M.	HQ-EZ	Bowyer, S.	NASW 3636	1712
49	UNIV CALIF-DAVIS	Meyer, G.	ARC	Krener, A. J.	NAG 2-268	1754
49	UNIV CALIF-DAVIS	Oseroff, H.	GSFC	Ford, G. E.	NAS 5-27577	1760
49	UNIV CALIF-IRVINE	Sacksteder, K.	LERC	Sirignano, W. A.	NAG 3-627	1779
49	UNIV CALIF-L ANGELES	Sobieski, J.	LARC	Schmit, L. A., Jr.	NSG 1490	1867
49	UNIV CALIF-SAN DIEGO	Davis, M. A.	GSFC	Whipple, E. C.	NAS 5-27248	1930
49	UNIV CALIF-SAN DIEGO	Sacksteder, K.	LERC	Berlad, A. L.	NAG 3-473	1887
49	UNIV CALIF-SAN DIEGO	Sacksteder, K. R.	LERC	Libby, P. A.	NAG 3-654	1889
49	UNIV CALIF-SAN DIEGO	Sacksteder, K. R.	LERC	Berlad, A. L.	NAS 3-24639	1924
49	UNIV CALIF-SAN DIEGO	Gordon, P. G.	HQ-EN	Arnold, J. R.	NASW 3643	1939
49	UNIV CALIF-SAN DIEGO	Owens, F. C.	HQ-LB	Arnold, J. R.	NGT 05-005-800	1951
49	UNIV OF CENTRAL FLA	Davis, T. C.	KSC	Smith, L. L.	NAG10-15	2349
49	UNIV OF CINCINNATI	Mikulas, M. M., Jr.	LARC	Nayfeh, A. H.	NSG 1185	4238
49	UNIV OF CONNECTICUT	Kaufman, A.	LERC	Jordan, E. H.	NAG 3-160	2219
49	UNIV OF FLORIDA	Fleigh, A. F.	GSFC	Green, A. E.	NAS 5-22908	2367
49	UNIV OF FLORIDA	Bivins, R. G.	HQ-LG	Thornton, J. R.	NASW 3624	2370
49	UNIV OF GEORGIA	Oseroff, H.	GSFC	Welch, R. A.	NAS 5-27383	2459
49	UNIV OF HAWAII-MANOA	Morakis, J. C.	GSFC	Shu Lin	NAG 5-407	2465

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49	UNIV OF HAWAII-MANOA	Miller, W. H.	GSFC	Weldon, E. J.	NAG 5-539	2466
49	UNIV OF HAWAII-MANOA	Wales, R. O.	GSFC	Longfield, D.	NAS 5-28403	2491
49	UNIV HOUSTON-HOUSTON	Juang, J. N.	LARC	Denman, E. D.	NAG 1-370	4679
49	UNIV HOUSTON-HOUSTON	Owens, F. C.	HQ-LB	McInnis, B. C.	NGT 44-005-803	4708
49	UNIV HOUSTON-CL LAKE	Young, E. B.	JSC	Bruno, S. J.	NAS 9-17177	4720
49	UNIV OF KENTUCKY	Sacksteder, K.	LERC	Altenkirch, R. A.	NAS 3-23901	2840
49	UNIV MARYLAND-COL PK	Degnan, J. J.	GSFC	A'hearn, M. F.	NAG 5-263	2951
49	UNIV MARYLAND-COL PK	Dombrowski, M.	GSFC	Wilkerson, T. D.	NAG 5-323	2954
49	UNIV MARYLAND-COL PK	Truskowski, W. F.	GSFC	Roussopoulos, N.	NAS 5-27724	2996
49	UNIV MARYLAND-COL PK	Chapman, J. W.	GSFC	Newton, J. W.	NCA 5-28	3010
49	UNIV MARYLAND-COL PK	Owens, F. C.	HQ-LB	Emad, F. O.	NGT 21-002-254	3026
49	UNIV OF MASS-AMHERST	Owens, F.	HQ-LB	Finn, J. T.	NGT 22-010-800	3295
49	UNIV OF MIAMI	Wales, R. O.	GSFC	Brown, D. O.	NAS 5-27642	2390
49	UNIV MICH-ANN ARBOR	Owens, F. C.	HQ-LB	Snyder, R. G.	NGT 23-005-802	3423
49	UNIV OF NEW MEXICO	Pohly, J.	HQ-U	Williams, R.	NGT 32-004-770	3685
49	UNIV OF NOTRE DAME	Miller, W. H.	GSFC	Costello, D.	NAG 5-557	2722
49	UNIV OF PITTSBURGH	Mihaloew, J.	LERC	Vogt, W. B.	NAG 3-606	4445
49	UNIV OF SOUTH DAKOTA	Berry, D. T.	ARC	Berkhout, J.	NAG 2-296	4510
49	UNIV TENNESSEE-KNOXV	Wieting, A. R.	LARC	Baker, A. J.	NAG 1-319	4520
49	UNIV TENNESSEE-KNOXV	Kassel, P. C.	LARC	Steinhoff, J. S.	NAG 1-560	4523
49	UNIV TEXAS-AUSTIN	Owens, F. C.	HQ-LB	Hull, D. G.	NGT 44-012-803	4772
49	UNIV TEXAS-DALLAS	Meyer, G.	ARC	Hunt, C. R.	NAG 2-366	4781
49	U TEX HLTH SC CTR-DA	Harnage, M. J., Jr.	JSC	Gaffney, F. A.	NAS 9-17167	4812
49	UNIV OF TOLEDO	Sullivan, T. L.	LERC	Fu, K. C.	NAG 3-373	4259
49	UNIV OF TOLEDO	Labus, T. L.	LERC	Dewitt, K. J.	NCC 3-34	4274
49	UNIV OF VIRGINIA	Lamb, G. M.	GSFC	Mattauch, R. J.	NAS 5-24218	5013
49	UNIV OF VIRGINIA	Storaasli, O. O.	LARC	Ortega, J. M.	NAG 1-46	4981
49	UNIV OF VIRGINIA	Soeder, J. F.	LERC	Weaver, A. C.	NAG 3-540	4997
49	UNIV OF WASHINGTON	Greenshields, D.	HQ-MR	Mueller, J. I.	NAGW 281	5129
49	UNIV WISC-MADISON	Burgess, M. A.	LARC	Wylie, D. P.	NAG 1-592	5176
49	UNIV WISC-MADISON	Owens, F. C.	HQ-LB	Kiefer, R. W.	NGT 50-002-800	5239
49	VIRGINIA POLY INST	Somers, D. M.	LARC	Eiss, N. S., Jr.	NAG 1-300	5042
49	VIRGINIA POLY INST	Santos-mason, B.	LARC	Wightman, J. P.	NAG 1-521	5058
49	VIRGINIA POLY INST	Powell, C. A.	LARC	Sundkvist, K. E.	NAG 1-565	5061
49	VIRGINIA POLY INST	Sobieski, J.	LARC	Drew, D. R.	NAS 1-17256	5082
49	VIRGINIA POLY INST	Owens, F. C.	HQ-LB	Regan, J. T.	NGT 47-004-804	5090
51	JOHNS HOPKINS UNIV	Logan, J.	JSC	Fortney, S. M.	NAS 9-16703	2913
51	BAYLOR COL OF MED	Daunton, N. G.	ARC	Igarashi, M.	NAG 2-289	4563
51	BAYLOR COL OF MED	Corcoran, M. L.	ARC	Fermin, C. D.	NAG 2-342	4564
51	BAYLOR COL OF MED	Ferandin, J.	ARC	Dunn, C. D.	NAS 2-10801	4565
51	BAYLOR COL OF MED	Leach, C. S.	JSC	Dunn, C. D.	NAS 9-16898	4573
51	BAYLOR UNIVERSITY	Halstead, T. W.	HQ-EB	Moore, R.	NAGW 734	4561
51	BOSTON UNIVERSITY	Devincenzi, D. L.	HQ-EB	Campbell, S. E.	NAGW 141	3057
51	BROOKLYN COLLEGE	Philpott, D. E.	ARC	Cottrell, S. F.	NCA 2-75201	3690
51	CASE WESTERN RESERVE	Souza, K.	ARC	Keefe, J. R.	NAG 2-339	4030
51	CASE WESTERN RESERVE	Halstead, T. W.	HQ-EB	Keefe, J. R.	NAGW 83	4096
51	COLUMBIA UNIVERSITY	Holton, E. M.	ARC	Doty, S. B.	NCC 2-325	3747
51	COLUMBIA UNIVERSITY	Halstead, T. W.	HQ-EB	Doty, S. B.	NAGW 238	3728
51	COLUMBIA UNIVERSITY	Halstead, T. W.	HQ-EB	Wolgemuth, D. J.	NAGW 346	3729
51	CORNELL UNIVERSITY	MacElroy, R. D.	ARC	Langhans, R. W.	NCA 2-175301	3798
51	CORNELL UNIVERSITY	Halstead, T. W.	HQ-EB	Leopold, A. C.	NAGW 3	3775
51	EAST CAROLINA UNIV	Winget, C. M.	ARC	Bruschi, C. V.	NAG 2-365	3966
51	ESTRN VA MED SCHL	Corcoran, M. L.	ARC	Spangenberg, D. B.	NAG 2-343	4900
51	ESTRN VA MED SCHL	Halstead, T. W.	HQ-EB	Spangenberg, D.	NAGW 530	4901
51	EMORY UNIVERSITY	Sandler, H.	ARC	Popovic, V. P.	NAG 2-87	2406
51	EMORY UNIVERSITY	Gomersall, E. W.	ARC	Popovic, V.	NAS 2-10527	2407
51	EMORY UNIVERSITY	Goldsboro, J. A.	ARC	McClure, H. M.	NAS 2-10627	2408
51	FLORIDA A&M UNIV	Winget, C. M.	ARC	Walker, C. A.	NAG 2-81	2318
51	FLORIDA A&M UNIV	Citron-trevino, N.	JSC	Johnson, A. M.	NAS 9-17076	2321
51	FLORIDA STATE UNIV	MacElroy, R. D.	ARC	White, R. C.	NAG 2-149	2330

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51	FLORIDA STATE UNIV	Souza, K.	ARC	Schatten, G.	NAG 2-340	2333
51	FLORIDA STATE UNIV	Peterson, D.	ARC	White, D.	NCA 2-235401	2338
51	FLORIDA STATE UNIV	Devincenzi, D. L.	HQ-EB	Friedmann, E. I.	NSG 7337	2340
51	HAHNEMANN MED COL	Mehler, W. R.	ARC	Rubertone, J. A.	NCA 2-270301	4351
51	HARVARD UNIVERSITY	Leon, H.	ARC	Moore-edde, M. C.	NAS 2-10547	3088
51	INDIANA U-BLOOMINGTN	Souza, K. A.	ARC	Malacinski, G. M.	NAG 2-323	2641
51	INDIANA U-BLOOMINGTN	Halstead, T. W.	HQ-EB	Malacinski, G. M.	NAGW 60	2648
51	KENYON COLLEGE	Halstead, T. W.	HQ-EB	Edwards, K. L.	NAGW 368	4155
51	LEHIGH UNIVERSITY	Yost, V.	MSFC	Vanderhoff, J. W.	NAS 8-32951	4358
51	LOMA LINDA UNIV	Owens, F. C.	HQ-LB	Phillips, T. G.	NGT 05-078-800	1425
51	LOYOLA UNIV-CHICAGO	Halstead, T. W.	HQ-EB	Hayes, A. B.	NAGW 131	2518
51	MARQUETTE UNIVERSITY	Ellis, S.	ARC	Fitts, R. H.	NAG 2-212	5172
51	MASS INST OF TECH	Daunton, N. G.	ARC	Young, L. R.	NAG 2-88	3121
51	MASS INST OF TECH	Daunton, N. G.	ARC	Bizzi, E.	NAG 2-126	3123
51	MASS INST OF TECH	Woolford, B. J.	JSC	Akin, D.	NAS 9-17266	3237
51	MASS INST OF TECH	Devincenzi, D. L.	HQ-EB	Biemann, K.	NGR 22-009-005	3251
51	MED COL OF WISC	Ferandin, J. A.	ARC	Riley, D. A.	NAS 2-11305	5173
51	MIAMI UNIVERSITY	Reschke, M. F.	JSC	Parker, D. E.	NAS 9-17413	4157
51	MICHIGAN STATE UNIV	Winget, C. M.	ARC	Bandurski, R. S.	NAG 2-362	3319
51	MICHIGAN STATE UNIV	Halstead, T. W.	HQ-EB	Bandurski, R. S.	NAGW 97	3331
51	MILLSAPS COLLEGE	Halstead, T. W.	HQ-EB	Meyers, D. G.	NAGW 643	3473
51	MONTANA STATE UNIV	Sauer, R. L.	JSC	McFeters, G. A.	NAS 9-17346	3549
51	MT SINAI SCH OF MED	Daunton, N. G.	ARC	Cohen, B.	NAG 2-336	3822
51	NEW MEX INST MINING	Geib, D. S.	HQ-EB	Brierley, J. A.	NAGW 378	3664
51	NO CAR A&T STATE U	Berry, W. E.	ARC	Ahrens, S. T.	NCA 2-545201	3978
51	NORTHWESTERN UNIV	Rambler, M. B.	HQ-EB	Lerman, A.	NAGW 339	2526
51	OHIO STATE UNIV	Halstead, T. W.	HQ-EB	Vans, M. E.	NAGW 297	4178
51	OHIO STATE UNIV	Halstead, T. W.	HQ-EB	Cline, M.	NAGW 625	4179
51	OHIO STATE UNIV	Owens, F. C.	HQ-LE	Evans, M. L.	NGT 36-020-800	4186
51	OKLAHOMA STATE UNIV	Devincenzi, D. L.	HQ-EB	Clayton, R. N.	NAGW 26	4281
51	PA ST U-HERSHEY MED	Keil, L.	ARC	Severs, W. B.	NCC 2-127	4368
51	PENN STATE U-UNIV PK	Morrison, D.	JSC	Todd, P. W.	NAS 9-15584	4405
51	PENN STATE U-UNIV PK	Halstead, T. W.	HQ-EB	Cosgrow, D. J.	NAGW 480	4394
51	PRINCETON UNIVERSITY	Fogle, W.	MSFC	Saville, D. A.	NAS 8-32614	3639
51	PURDUE UNIVERSITY	Halstead, T. W.	HQ-EB	Mitchell, C. A.	NSG 7278	2716
51	ROCKEFELLER UNIV	Daunton, N. G.	ARC	Miller, A. D.	NAG 2-164	3869
51	ROCKEFELLER UNIV	Daunton, N. G.	ARC	Wilson, V. J.	NSG 2380	3871
51	ROCKEFELLER UNIV	Devincenzi, D. L.	HQ-EB	Mercer-smith, J. A.	NAGW 321	3870
51	SAN DIEGO STATE UNIV	Halstead, T. W.	HQ-EB	Rayle, D.	NAGW 230	1428
51	SAN JOSE STATE UNIV	Jahnke, L. L.	ARC	Holley, D. C.	NCA 2-59	1450
51	SAN JOSE STATE UNIV	Klein, H. P.	ARC	Weaver, E. C.	NCA 2-675202	1452
51	SAN JOSE STATE UNIV	Daunton, N. G.	ARC	Fox, R. A.	NCC 2-167	1469
51	SAN JOSE STATE UNIV	Deroshia, C. W.	ARC	Holley, D. C.	NCC 2-197	1472
51	SAN JOSE STATE UNIV	Oyama, J.	ARC	Holley, D. C.	NCC 2-207	1473
51	SAN JOSE STATE UNIV	Kraft, L. M.	ARC	Savage, W.	NCC 2-227	1476
51	SAN JOSE STATE UNIV	Mehler, W. R.	ARC	Savage, W.	NCC 2-282	1481
51	SAN JOSE STATE UNIV	De Vincenzi, D. L.	HQ-EB	Weaver, E. C.	NAGW 566	1449
51	SO ILL UNIV-CARBONDL	Devincenzi, D. L.	HQ-EB	Yopp, J. H.	NAGW 344	2530
51	STANFORD UNIVERSITY	Matson, P.	ARC	Mooney, H. A.	NCA 2-31	1561
51	STANFORD UNIVERSITY	Williams, B. A.	ARC	Heller, H. C.	NCA 2-745206	1572
51	STANFORD UNIVERSITY	Holton, E. M.	ARC	Feldman, D.	NCA 2-745208	1574
51	STANFORD UNIVERSITY	Des Marais, D. J.	ARC	Briggs, W. R.	NCA 2-745403	1586
51	STANFORD UNIVERSITY	Daunton, N. G.	ARC	Peroutka, S. J.	NCA 2-745504	1600
51	STANFORD UNIVERSITY	Des Marais, D. J.	ARC	Biggs, W.	NCA 2-745506	1602
51	STANFORD UNIVERSITY	Devincenzi, D. L.	HQ-EB	Vitousek, P.	NAGW 554	1533
51	STATE U NY-BINGHAMTN	Gomersall, E. W.	ARC	Sulzman, F. M.	NAG 2-232	3888
51	STATE U NY-BINGHAMTN	Winget, C. M.	ARC	Sulzman, F. M.	NAG 2-361	3889
51	STATE U NY-BINGHAMTN	Souza, K. A.	ARC	Lawrence, G. M.	NAS 2-10621	3891
51	STATE U NY-BINGHAMTN	Nolte, R. W.	JSC	Sulzman, F. M.	NAS 9-15975	3892
51	STATE U NY-BINGHAMTN	Owens, F. C.	HQ-LB	Jensen, R. A.	NGT 33-188-801	3893

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51	STATE UNIV NY-BUFFAL	Ellis, S.	ARC	Almon, R. R.	NAG 2-211	3900
51	STATE U NY-STONY BRK	Halstead, T. W.	HQ-EB	Krikorian, A. D.	NSG 7270	3935
51	TEMPLE UNIVERSITY	Halstead, T. W.	HQ-EB	Finck, A.	NAGW 242	4428
51	TEXAS A&M UNIVERSITY	Owens, F. C.	HQ-LB	Heilman, J. L.	NGT 44-001-802	4669
51	TUFTS UNIVERSITY	Ellis, S.	ARC	Goldspink, G.	NAG 2-272	3279
51	TULANE UNIVERSITY	MacElroy, R. D.	ARC	Johnson, E. J.	NCA 2-800301	2868
51	TULANE UNIVERSITY	MacElroy, R. D.	ARC	Johnson, E. J.	NCA 2-800501	2869
51	U MD BALTO PROF SCHL	Ellis, S.	ARC	Max, S. R.	NAG 2-100	2930
51	U OF MD ENVTEST STDS	Owens, F. C.	HQ-LE	Fisher, T. R.	NGT 21-002-822	3044
51	UNIV ALA-BIRMINGHAM			Bugg, C. E.	NAG 8-524	1048
51	UNIV ALA-BIRMINGHAM	Moore, W. W.	MSFC	Bugg, C. E.	NAS 8-36611	1051
51	UNIV ALA-HUNTSVILLE	Owens, F. C.	HQ-LB	Young, R. B.	NGT 01-002-803	1097
51	UNIV OF ARIZONA	Souza, K. A.	ARC	Gruener, R. P.	NAG 2-326	1189
51	UNIV OF ARIZONA	Halstead, T. W.	HQ-EB	Tischler, M.	NAGW 227	1223
51	UNIV OF ARIZONA	Halstead, T. W.	HQ-EB	Stuart, D. G.	NAGW 338	1227
51	UNIV OF ARIZONA	Halstead, T. W.	HQ-EB	Gruener, R. P.	NAGW 539	1236
51	UNIV OF ARIZONA	Halpern, R. E.	HQ-EN	Bier, M.	NAGW 693	1247
51	UNIV OF ARIZONA	Owens, F. C.	HQ-LB	Convertino, V.	NGT 03-002-802	1289
51	UNIV CALIF-BERKELEY	Souza, K. A.	ARC	Thornton, J. R.	NCA 2-50205	1718
51	UNIV CALIF-BERKELEY	MacElroy, R. D.	ARC	Packer, L.	NCA 2-50401	1719
51	UNIV CALIF-BERKELEY	Souza, K. A.	ARC	Gerhart, J. C.	NCA 2-50404	1722
51	UNIV CALIF-BERKELEY	Halstead, T. W.	HQ-EB	Feldman, L. J.	NAGW 239	1688
51	UNIV CALIF-BERKELEY	Devincenzi, D. L.	HQ-EB	Buchanan, B. B.	NAGW 427	1690
51	UNIV CALIF-BERKELEY	Halstead, T. W.	HQ-EB	Tsiem, R. Y.	NAGW 515	1692
51	UNIV CALIF-BERKELEY	Halstead, T. W.	HQ-EB	Pace, N.	NSG 7336	1752
51	UNIV CALIF-DAVIS	Holton, E. M.	ARC	Horowitz, J. M.	NAG 2-341	1755
51	UNIV CALIF-DAVIS	Holton, E. M.	ARC	Fuller, C. A.	NAG 2-349	1756
51	UNIV CALIF-DAVIS	Ellis, S.	ARC	Ashmore, C. R.	NCA 2-180302	1763
51	UNIV CALIF-DAVIS	Ellis, S.	ARC	Ashmore, C. R.	NCA 2-180303	1764
51	UNIV CALIF-DAVIS	Halstead, T. W.	HQ-EB	Horowitz, J. M.	NSG 2234	1773
51	UNIV CALIF-DAVIS	Owens, F. C.	HQ-LB	Bernauer, E.	NGT 05-004-801	1772
51	UNIV CALIF-IRVINE	Daunton, N. G.	ARC	Blanks, R. H.	NAG 2-288	1775
51	UNIV CALIF-IRVINE	Ferandin, J. A.	ARC	Baldwin, K. M.	NAS 2-10522	1786
51	UNIV CALIF-IRVINE	Devincenzi, D. L.	HQ-EB	Lanyi, T. K.	NAGW 212	1782
51	UNIV CALIF-L ANGELES	Grindeland, R. E.	ARC	Vailas, A. C.	NCA 2-390501	1855
51	UNIV CALIF-L ANGELES	Grindeland, R. E.	ARC	Edgerton, V. R.	NCA 2-390502	1856
51	UNIV CALIF-RIVERSIDE	Leon, H.	ARC	Fuller, C. A.	NAS 2-10536	1883
51	UNIV CALIF-RIVERSIDE	Halstead, T. W.	HQ-EB	Fuller, C. A.	NAGW 309	1881
51	UNIV CALIF-SAN DIEGO	Goldwater, D. J.	ARC	Goldberger, A. L.	NCC 2-335	1944
51	UNIV CALIF-SAN DIEGO	Devincenzi, D. L.	HQ-EB	Fahey, R. C.	NAGW 342	1911
51	UNIV CALIF-SAN FRAN	Mehler, W. R.	ARC	Ralston, H. J.	NCA 2-13	1965
51	UNIV CALIF-SAN FRAN	Keil, L. C.	ARC	Reid, I. A.	NCA 2-665203	1967
51	UNIV CALIF-SAN FRAN	Keil, L. C.	ARC	Dallman, M. F.	NCA 2-665401	1969
51	UNIV CALIF-SAN FRAN	Keil, L. C.	ARC	Reid, I. A.	NCA 2-665402	1970
51	UNIV CALIF-SAN FRAN	Holton, E. M.	ARC	Bikle, D. D.	NCC 2-328	1976
51	UNIV CALIF-SAN FRAN	Halstead, T. W.	HQ-EB	Bikle, D. D.	NAGW 236	1960
51	UNIV CALIF-SAN FRAN	Halstead, T. W.	HQ-EB	Halloran, B.	NAGW 349	1962
51	UNIV CALIF-SAN FRAN	Halstead, T. W.	HQ-EB	Ganong, W. F.	NAGW 490	1963
51	UNIV CALIF-SAN FRAN	Devincenzi, D. L.	HQ-EB	Stoeckenius, W.	NSG 7151	1980
51	UNIV CALIF-SAN FRAN	Owens, F. C.	HQ-LE	Bikle, D.	NGT 05-029-801	1979
51	UNIV OF CHICAGO	Daunton, N. G.	ARC	Goldberg, J. M.	NAG 2-148	2534
51	UNIV OF CHICAGO	Billingham, J.	ARC	Raup, D. M.	NAG 2-237	2535
51	UNIV OF CHICAGO	Soffen, G. A.	HQ-EB	Fernandez, H.	NSG 7303	2592
51	UNIV OF CONNECTICUT	Young, D. R.	ARC	Brenner, F.	NAG 2-286	2217
51	UNIV OF DELAWARE	Rambler, M. B.	HQ-EB	Klenas, V.	NAGW 374	2247
51	UNIV OF FLORIDA	Greenleaf, J. E.	ARC	Fregly, M. J.	NCA 2-240301	2376
51	UNIV OF FLORIDA	Holton, E. M.	ARC	Wronski, T. J.	NCC 2-337	2378
51	UNIV HOUSTON-HOUSTON	Devincenzi, D. L.	HQ-EB	Fox, G. E.	NSG 7440	4715
51	UNIV HOUSTON-HOUSTON	Halstead, T. W.	HQ-EB	Cowles, J. R.	NSG 9042	4717
51	UNIV HOUSTON-HOUSTON	Owens, F. C.	HQ-LB	Heilman, J. L.	NGT 44-005-801	4706

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51	UNIV HOUSTON-HOUSTON	Owens, F. C.	HQ-LB	Nerem, R. M.	NGT 44-005-805	4710
51	UNIV ILLINOIS-CHICGO	Billingham, J.	ARC	Sepkoski, J. J., Jr.	NAG 2-282	2594
51	UNIV OF LOUISVILLE	Mandel, A. D.	ARC	Sonnenfeld, G.	NCC 2-213	2845
51	UNIV OF LOUISVILLE	Holton, E. M.	ARC	Musacchia, X. J.	NSG 2325	2846
51	UNIV OF LOUISVILLE	Halstead, T. W.	HQ-EB	Musacchia, X. J.	NAGW 70	2843
51	UNIV MICH-ANN ARBOR	Corcoran, M. L.	ARC	Ross, M. D.	NAG 2-325	3359
51	UNIV MICH-ANN ARBOR	Daunton, N. G.	ARC	Ross, M. D.	NAG 2-333	3360
51	UNIV MICH-ANN ARBOR	Ferandin, J. A.	ARC	Ross, M.	NAS 2-10535	3398
51	UNIV MICH-ANN ARBOR	Oseroff, H.	GSFC	Olsen, C. E.	NAS 5-28755	3409
51	UNIV MICH-ANN ARBOR	Peck, E. E.	JSC	Anderson, D. J.	NAS 9-15375	3413
51	UNIV MICH-ANN ARBOR	Halstead, T. W.	HQ-EB	Kaufman, P. B.	NAGW 34	3386
51	UNIV MICH-ANN ARBOR	Halstead, T. W.	HQ-EB	Ross, M. D.	NSG 9047	3428
51	UNIV OF NEVADA-RENO	Daunton, N. G.	ARC	Harrington, T. L.	NCC 2-290	3575
51	UNIV NEW HAMP-DURHAM	MacElroy, R. D.	ARC	Averner, M. M.	NCA 2-9	3598
51	UNIV NEW HAMP-DURHAM	MacElroy, R. D.	ARC	Moore, B.	NCC 2-27	3599
51	UNIV NEW HAMP-DURHAM	MacElroy, R. D.	ARC	Moore, B., III	NCC 2-209	3600
51	UNIV NEW HAMP-DURHAM	MacElroy, R. D.	ARC	Averner, M. M.	NCC 2-210	3601
51	UNIV NEW HAMP-DURHAM	Watson, R.	HQ-EB	Moore, B.	NAGW 453	3588
51	U OKLA-HLTH SCI CTR	Heinrich, M. R.	ARC	Stone, H. L.	NAS 2-10408	4288
51	U OKLA-HLTH SCI CTR	Sandler, H.	ARC	Foreman, R. D.	NCA 2-580401	4289
51	UNIV OF PACIFIC	Holton, E. M.	ARC	Roberts, W. E.	NAG 2-322	2029
51	UNIV OF PACIFIC	Holton, E. M.	ARC	Roberts, W. E.	NCC 2-224	2032
51	UNIV OF PACIFIC	Halstead, T. W.	HQ-EB	Roberts, W. E.	NAGW 356	2030
51	UNIV OF PENNSYLVANIA	Peck, E. E.	JSC	Brown, A. H.	NAS 9-15531	4434
51	UNIV OF PENNSYLVANIA	Halstead, T. W.	HQ-EB	Brown, A. H.	NGR 39-010-149	4439
51	UNIV OF PITTSBURGH	Daunton, N. G.	ARC	Tomko, D. L.	NAG 2-155	4443
51	UNIV SAN FRANCISCO	Klein, H. P.	ARC	Brown, R. J.	NCC 2-85	2040
51	UNIV SAN FRANCISCO	Danellis, J. V.	ARC	Dallman, M. F.	NCC 2-354	2042
51	UNIV SAN FRANCISCO	Richmond, R. G.	JSC	Benton, E. V.	NAS 9-17389	2039
51	UNIV OF SANTA CLARA	Hochstein, L. I.	ARC	Tomlinson, G. A.	NCA 2-50	2046
51	UNIV OF SANTA CLARA	Mandel, A. D.	ARC	Caren, L. D.	NCA 2-685002	2047
51	UNIV OF SANTA CLARA	Hochstein, L. I.	ARC	Tomlinson, G. A.	NCA 2-685401	2051
51	UNIV OF SANTA CLARA	Grindeland, R. E.	ARC	Fast, T. R.	NCC 2-180	2061
51	U TENNESSEE-MEMPHIS	Ferandin, J. A.	ARC	Lange, R. D.	NAS 2-11586	4550
51	UNIV TEXAS-AUSTIN	Halstead, T. W.	HQ-EB	Roux, S. J.	NSG 7480	4777
51	U TEX MED BRANCH-GAL	Daunton, N. G.	ARC	Perachio, A. A.	NAG 2-26	4805
51	U TEX MED BRANCH-GAL	Davinton, N. G.	ARC	Correia, M. J.	NAG 2-186	4806
51	U TEX MED BRANCH-GAL	Daunton, N. G.	ARC	Gallagher, J. P.	NAG 2-260	4807
51	U TEX MED BRANCH-GAL	Daunton, N. G.	ARC	Correia, M. H.	NAG 2-293	4808
51	U TEX MED BRANCH-GAL	Owens, F. C.	HQ-LB	Correia, M. J.	NGT 44-088-800	4809
51	U TEX HLTH SC CTR-DA	Halstead, T. W.	HQ-EB	Templeton, G. H.	NAGW 140	4810
51	U TEX HLTH SC CTR-HU	Ellis, S.	ARC	Booth, F. W.	NAG 2-239	4816
51	U TEX HLTH SC CTR-HU	Daligcon, B. C.	ARC	Duke, P. J.	NAG 2-332	4817
51	U TEX HLTH SC CTR-HU	Waligora, J.	JSC	Hills, B. A.	NAG 9-23	4818
51	U TEX HLTH SC CTR-HU	Morrison, D. R.	JSC	Tom, B. H.	NAS 9-17403	4821
51	U TEX HLTH SC CTR-HU	Halstead, T. W.	HQ-EB	Duke, P. J.	NAGW 438	4819
51	UNIV OF UTAH	Young, D. R.	ARC	Jee, W. S.	NAG 2-108	4829
51	UNIV WISC-MADISON	Young, D. R.	ARC	Deluca, H. F.	NAG 2-167	5177
51	UNIV WISC-MADISON	Macelroy, R. D.	ARC	Tibbitts, T.	NCC 2-301	5234
51	UNIV OF WYOMING	MacElroy, D.	ARC	Middaugh, C.	NCA 2-880201	5261
51	UTAH STATE UNIV	MacElroy, R. D.	ARC	Salisbury, F. B.	NCC 2-139	4856
51	UTAH STATE UNIV	Halstead, T. W.	HQ-EB	Salisbury, F. B.	NSG 7567	4858
51	VANDERBILT UNIVERSTY	Holton, E. M.	ARC	Dettbarn, W. D.	NAG 2-301	4553
51	WAKE FOREST UNIV	Ferandin, J.	ARC	Hutchins, P. M.	NAS 2-10523	4021
51	WASHINGTON UNIVERSTY	Halstead, T. W.	HQ-EB	Simmons, D. J.	NAGW 301	3530
51	WASHINGTON UNIVERSTY	Halstead, T. W.	HQ-EB	Pickard, B. G.	NAGW 420	3532
51	WOODSHOLE OCEAN INST	Geib, D. S.	HQ-EB	Dacey, J. H.	NAGW 606	3311
51	WRIGHT STATE UNIV	Daunton, N. G.	ARC	Crampton, G. H.	NCC 2-229	4277
51	YALE UNIVERSITY	Halstead, T. W.	HQ-EB	Galston, A. W.	NSG 7290	2241
54	COLORADO STATE UNIV	Nachtwey, D. S.	JSC	Lett, J. T.	NAG 9-10	2095

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54	GEORGIA INST OF TECH	Fraser, R. S.	GSFC	Patterson, E. M.	NAG 5-592	2427
54	MASS INST OF TECH	Yates, I. C.	MSFC	Gatos, H. C.	NAS 8-36604	3232
54	OHIO STATE UNIV	Halstead, T. W.	HQ-EB	Sack, F. D.	NAGW 780	4181
54	SAN FRAN STATE UNIV	Lawless, J. G.	ARC	Rau, G. H.	NCA 2-660402	1439
54	SAN FRAN STATE UNIV	Des Marais, D. J.	ARC	Rau, G. H.	NCA 2-660403	1440
54	SAN FRAN STATE UNIV	Lawless, J. G.	ARC	Banin, A.	NCC 2-321	1443
54	STANFORD UNIVERSITY	Peterson, D. L.	ARC	Vitousek, P.	NCA 2-30	1560
54	STANFORD UNIVERSITY	Lawless, J. G.	ARC	Vitousek, P.	NCA 2-745501	1597
54	STATE UNIV NY-ALBANY	Sauer, R.	JSC	Janauer, G. E.	NAS 9-16604	3884
54	STATE U NY-STONY BRK	Owens, F. C.	HQ-LB	Schubel, J.	NGT 33-015-802	3932
54	TUSKEGEE INSTITUTE	Philpott, D. E.	ARC	Sapp, W. J.	NCC 2-12	1043
54	UNIV CALIF-BERKELEY	Haughney, L. C.	ARC	McKee, C. F.	NAG 2-310	1663
54	UNIV OF MONTANA	Owens, F. C.	HQ-LE	Running, S. W.	NGT 27-003-800	3556
54	UNIV NEW HAMP-DURHAM	Rambler, M. B.	HQ-EB	Moore, B.	NAGW 714	3591
54	UNIV SO MISSISSIPPI	Wolverton, B. C.	NSTL	Taylor, R. D.	NAS13-265	3493
54	U VERMONT & ST AGR C	Williams, D. L.	GSFC	Vogelmann, H. W.	NAS 5-28430	4860
54	U VERMONT & ST AGR C	Williams, D. L.	GSFC	Donnelly, J. R.	NAS 5-28431	4861
54	UNIV OF WASHINGTON	Rambler, M. B.	HQ-EB	Richey, J. E.	NAGW 711	5138
54	WEST VIRGINIA UNIV	Owens, F. C.	HQ-LB	Eli, R.	NGT 49-001-801	5168
55	ALABAMA A&M UNIV	Joyce, A. T.	NSTL	Coleman, T. L.	NAG13-2	1008
55	ALABAMA A&M UNIV	Joyce, A. T.	NSTL	Montgomery, O. L.	NAG13-3	1009
55	COLORADO STATE UNIV	Kimes, D. S.	GSFC	Smith, J. A.	NAG 5-276	2091
55	COLORADO STATE UNIV	Knott, W. M.	KSC	Bausch, W. C.	NAS10-10933	2104
55	GEORGE WASHINGTON U	Choudhury, B.	GSFC	Lang, R. H.	NAG 5-265	2271
55	HUNTER COLLEGE	Kimes, D. S.	GSFC	Strahler, A. H.	NAG 5-273	3819
55	MASS INST OF TECH	Chang, A.	GSFC	Kong, J. A.	NAG 5-270	3161
55	MICHIGAN STATE UNIV	Nelson, R.	GSFC	Bartholic, J.	NAS 5-27618	3332
55	MICHIGAN STATE UNIV	Nelson, R.	GSFC	Bartholic, J.	NAS 5-29157	3333
55	NO CAROLINA STATE U	MacElroy, R.	ARC	Raper, C. D., Jr.	NCC 2-101	4006
55	OREGON STATE UNIV	Peterson, D. L.	ARC	Myrold, D. D.	NCA 2-586402	4312
55	PURDUE UNIVERSITY	MacElroy, R. D.	ARC	Mitchell, C. A.	NCC 2-100	2705
55	PURDUE UNIVERSITY	Deering, D. W.	GSFC	Vanderbilt, V. C.	NAG 5-269	2690
55	PURDUE UNIVERSITY	Knott, W. M.	KSC	Mitchell, C. A.	NAG10-18	2697
55	SAN JOSE STATE UNIV	Matson, P. A.	ARC	Savage, W.	NCA 2-675404	1458
55	STANFORD UNIVERSITY	Peterson, D. L.	ARC	Vitousek, P.	NCA 2-745410	1593
55	TEXAS A&M UNIVERSITY	Pitts, D.	JSC	Fung, A.	NAG 9-115	4635
55	TEXAS A&M UNIVERSITY	Pitts, D. E.	JSC	Heilman, J. L.	NAG 9-121	4636
55	UNIV CALIF-DAVIS	MacElroy, R. D.	ARC	Huffaker, R. C.	NCC 2-99	1765
55	UNIV OF KANSAS	Choudhury, B.	GSFC	Fung, A. K.	NAG 5-268	2799
55	UNIV OF KANSAS	Brakke, T. W.	GSFC	Moore, R. K.	NAG 5-271	2800
55	UNIV OF KANSAS	Schmugge, T.	GSFC	Ulaby, F. T.	NAG 5-272	2801
55	UNIV MICH-ANN ARBOR	Schmugge, T.	GSFC	Ulaby, F. T.	NAG 5-480	3378
55	UNIV OF MONTANA	Peterson, D. L.	ARC	Running, S.	NCA 2-475401	3555
55	UNIV NEBRASKA-LINCLN	Kimes, D. S.	GSFC	Norman, J. M.	NAG 5-277	3560
55	UNIV NEBRASKA-LINCLN	Owens, F. C.	HQ-LB	Blad, B. L.	NGT 28-004-801	3566
55	UNIV TEXAS-ARLINGTON	Choudhury, B.	GSFC	Fung, A. K.	NAG 5-486	4725
55	UNIV WISC-MADISON	Peterson, D. L.	ARC	Aber, J. D.	NCA 2-865401	5233
55	UNIV OF WYOMING	Matson, P. A.	ARC	Reiners, W. A.	NCA 2-880401	5262
56	JOHNS HOPKINS UNIV	Friedman, D. S.	GSFC	Long, D.	NAS 5-23732	2907
56	JOHNS HOPKINS UNIV	Logan, J. S.	JSC	Fortney, S.	NAS 9-17199	2914
56	BAYLOR COL OF MED	Homick, J. L.	JSC	Banks, P. M.	NAS 9-14546	4566
56	BAYLOR COL OF MED	Leach, C. S.	JSC	Alfrey, C.	NAS 9-14662	4567
56	BAYLOR COL OF MED	Leach, C. S.	JSC	Dunn, C. D.	NAS 9-16180	4569
56	BAYLOR COL OF MED	Pierson, D. L.	JSC	Knight, V.	NAS 9-16280	4570
56	BAYLOR COL OF MED	Smith, M. C.	JSC	Leblanc, A.	NAS 9-16442	4571
56	BAYLOR COL OF MED	Smith, M. C.	JSC	Leblanc, A.	NAS 9-16818	4572
56	BAYLOR COL OF MED	Lacy, J. L.	JSC	Roberts, R.	NAS 9-17173	4574
56	BAYLOR COL OF MED	Newkirk, K.	JSC	Leblanc, A.	NAS 9-17255	4575
56	BAYLOR COL OF MED	Johnson, P.	JSC	Leblanc, A.	NAS 9-17256	4576
56	CAL STATE U-NRTHRIDGE	Cramer, D. B.	HQ-S	Bluth, B. J.	NAGW 659	1405



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56	CASE WESTERN RESERVE	Harris, J. W.	JSC	Leigh, R. J.	NAS 9-17439	4099
56	COLUMBIA UNIVERSITY	Oyama, J.	ARC	Wolgemuth, D. J.	NAG 2-324	3719
56	COLUMBIA UNIVERSITY	Young, D. R.	ARC	Pawluk, R. J.	NCA 2-172102	3744
56	CORNELL UNIV-MED CTR	Lauber, J. K.	ARC	Monk, T. H.	NCC 2-253	3816
56	DUKE UNIVERSITY	Vann, R. D.	JSC	Horrigan, D. J.	NAS 9-17160	3961
56	FLORIDA A&M UNIV	Knott, W. M.	KSC	Lewis, B. A.	NAG10-9	2319
56	HARVARD UNIVERSITY	Leach, C. S.	JSC	Hollenberg, N. K.	NAG 9-17	3078
56	HARVARD UNIVERSITY	Leach, C. S.	JSC	Moore-ede, M. C.	NSG 9054	3107
56	LINCOLN UNIV-PA	Alterescu, S.	GSFC	Frankowsky, J. W.	NAS 5-23800	4365
56	MASS INST OF TECH	Winget, C. M.	ARC	Wurtman, R. J.	NAG 2-210	3127
56	MASS INST OF TECH	Homick, J. L.	JSC	Oman, C. M.	NCC 9-1	3245
56	MASS INST OF TECH	Craemer, D. B.	HQ-EB	Young, L. R.	NASW 3651	3240
56	MED COL OF WISC	Ellis, S.	ARC	Riley, D. A.	NCC 2-266	5174
56	PENN STATE U-UNIV PK	Grindeland, R. E.	ARC	Hymer, W. C.	NCC 2-287	4412
56	PENN STATE U-UNIV PK	Harris, J. W.	JSC	Koch, K.	NAG 9-118	4393
56	PENN STATE U-UNIV PK	Morrison, D. R.	JSC	Hymer, W. C.	NAS 9-15566	4404
56	PENN STATE U-UNIV PK	Morrison, D.	JSC	Hymer, W.	NAS 9-17416	4406
56	STANFORD UNIVERSITY	Young, D. R.	ARC	Steele, C. R.	NAG 2-130	1494
56	STANFORD UNIVERSITY	Young, D. R.	ARC	Steele, C. R.	NAG 2-348	1506
56	STANFORD UNIVERSITY	Sandler, H.	ARC	Debusk, R. F.	NCA 2-745402	1585
56	STANFORD UNIVERSITY	Goldwater, D.	ARC	Popp, R.	NCC 2-1	1604
56	STANFORD UNIVERSITY	Sandler, H.	ARC	Harrison, D. C.	NCC 2-232	1621
56	STANFORD UNIVERSITY	Lauber, J. K.	ARC	Dement, W. C.	NCC 2-302	1629
56	STANFORD UNIVERSITY	Keil, L. C.	ARC	Luetscher, J. A.	NGR 05-020-456	1644
56	TULANE UNIVERSITY	Mehler, W. R.	ARC	Brizzee, K. R.	NAG 2-101	2867
56	UNIV CALIF-L ANGELES	Grindeland, R. E.	ARC	Edgerton, V. R.	NCC 2-292	1857
56	UNIV CALIF-SAN FRAN	Keil, L. C.	ARC	Thrasher, T. N.	NCA 2-32	1966
56	UNIV CALIF-SAN FRAN	Mehler, W. R.	ARC	Basbaum, A. I.	NCA 2-665301	1968
56	UNIV CALIF-SAN FRAN	Sandler, H.	ARC	Glantz, S. A.	NCA 2-665905	1971
56	UNIV CALIF-SAN FRAN	Philpott, D. E.	ARC	Arnaud, C. D.	NCC 2-162	1973
56	UNIV CALIF-SAN FRAN	Holton, E. M.	ARC	Cann, C. E.	NCC 2-178	1974
56	UNIV CALIF-SAN FRAN	Young, D. R.	ARC	Brown, R. J.	NCC 2-365	1978
56	UNIV OF FLORIDA	Buchanan, P.	KSC	Grimes, R. R.	NAG10-7	2362
56	UNIV OF FLORIDA	Buchanan, P.	KSC	Grams, R. R.	NAG10-12	2363
56	UNIV OF FLORIDA	Buchanan, P.	KSC	Grams, R. R.	NAG10-20	2364
56	UNIV HOUSTON-HOUSTON	Degioanni, J.	JSC	Feldman, S.	NAS 9-16980	4698
56	UNIV HOUSTON-HOUSTON	Huntoon, C. L.	JSC	Nerem, R. M.	NCC 9-12	4704
56	UNIV MARYLAND-BALT	Logan, J. S.	JSC	Siegel, J. H.	NAS 9-17186	2929
56	U OF MED & DEN-CAMDN	Newkirk, K.	JSC	Stein, P.	NAS 9-17276	3659
56	UNIV OF MIAMI	Huntoon, C. L.	JSC	Epstein, M.	NAS 9-15473	2393
56	UNIV MICH-ANN ARBOR	Homick, J. L.	JSC	Anderson, D. J.	NAS 9-15244	3412
56	UNIV MICH-ANN ARBOR	Homick, J. L.	JSC	Anderson, D.	NAS 9-17245	3414
56	UNIV N CAR-CHPL HILL	Young, D. R.	ARC	Mechanic, G.	NAG 2-181	4014
56	U OKLA-HLTH SCI CTR	Lucid, S.	JSC	Nordquist, R.	NAG 9-18	4287
56	UNIV SAN FRANCISCO	Young, D. R.	ARC	Brown, R. J.	NCC 2-135	2041
56	UNIV SAN FRANCISCO	Richmond, R. G.	JSC	Benton, E. V.	NAS 9-15152	2037
56	U TEX HLTH SC CTR-DA	Bungo, M.	JSC	Blomquist, C. G.	NSG 9026	4815
56	U TEX HLTH SC CTR-HU	Johnson, P.	JSC	Schneider, V. S.	NAS 9-16688	4820
56	U TEX HLTH SC CTR-HU	Logan, J.	JSC	Houtchens, B.	NAS 9-17522	4822
56	U TEX HLTH SC CTR-SA	Johnson, P.	JSC	George, J. N.	NAG 9-5	4823
56	U TEX HLTH SC CTR-SA	Leach, C.	JSC	Lifschitz, M.	NAS 9-16366	4824
56	UNIV OF UTAH	Reynolds, M. A.	JSC	Westenskow, D.	NAS 9-17345	4836
56	UNIV OF UTAH	Logan, J. S.	JSC	Gardner, R.	NAS 9-17425	4837
56	UNIV WISC-MADISON	Cintron-trevino, N.	JSC	Schnoes, H. K.	NAS 9-15580	5230
56	VIRGINIA COMNWLT U	Hardin, J. C.	LARC	Patterson, J. L.	NAG 1-241	5024
56	VIRGINIA COMNWLT U	Yost, W. T.	LARC	Marmarou, A.	NCC 1-87	5029
59	BAYLOR COL OF MED	Leach, C. S.	JSC	Suki, W. N.	NAS 9-15891	4568
59	BRANDEIS UNIVERSITY	Harris, J.	JSC	Lackner, J. B.	NAS 9-15147	3067
59	COLLEGE OF WM & MARY	Hall, J. B.	LARC	Brewer, D. A.	NAG 1-550	4878
59	DUKE UNIVERSITY	MacElroy, R. D.	ARC	Quinlan, A. V.	NCA 2-206301	3963

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO.
59	FLORIDA A&M UNIV	Winget, C. M.	ARC	Walker, C. A.	NSG 2029	2323
59	FLORIDA A&M UNIV	Winget, C. M.	ARC	Soliman, K. F.	NSG 2183	2324
59	FLORIDA A&M UNIV	Long, I.	KSC	Early, J.	NAS10-11066	2322
59	GEORGE WASHINGTON U	Halstead, T. W.	HQ-EB	Waters, E., Jr.	NASW 3165	2276
59	HARVARD UNIVERSITY	Sandler, H.	ARC	Vatner, S.	NAG 2-294	3070
59	HOWARD UNIVERSITY	Sandler, H.	ARC	Hawthorne, E. W.	NAG 2-250	2296
59	LA STATE U-SHREVEPT	Harris, J. W.	JSC	Wood, C. D.	NAS 9-16801	2859
59	MASS INST OF TECH	Sandler, H.	ARC	Cohen, R. J.	NAG 2-327	3135
59	MASS INST OF TECH	MacElroy, R. D.	ARC	Karel, M.	NCC 2-231	3242
59	MASS INST OF TECH	Peck, E. E.	JSC	Young, L. R.	NAS 9-15343	3233
59	MASS INST OF TECH	Harris, C. D.	JSC	Baird, J. K.	NAS 9-16523	3234
59	MIAMI UNIVERSITY	Homick, J. L.	JSC	Parker, D. E.	NAS 9-14538	4156
59	MISSISSIPPI STATE U	Morrison, D.	JSC	Rundel, R.	NAS 9-17319	3481
59	OREGON HLTH SCNCS U	Fogle, V.	MSFC	Brooks, D. E.	NAS 8-35333	4304
59	OLD DOMINION UNIV	Pope, A. T.	LARC	Kirby, R. H.	NAG 1-451	4939
59	PENN STATE U-UNIV PK	Morrison, D.	JSC	Todd, P.	NAS 9-17431	4407
59	SAN FRAN STATE UNIV	Des Marais, D. J.	ARC	Rau, G. H.	NCA 2-660302	1437
59	SAN FRAN STATE UNIV	Billingnam, J.	ARC	Seeger, C. L.	NCC 2-214	1442
59	SAN FRAN STATE UNIV	Carle, G. C.	ARC	Banin, A.	NCC 2-352	1444
59	SAN JOSE STATE UNIV	Jahnke, L. L.	ARC	Holley, D. C.	NCA 2-675303	1453
59	SAN JOSE STATE UNIV	Hart, S. G.	ARC	Plant, W. T.	NCC 2-34	1460
59	SAN JOSE STATE UNIV	Carle, G. C.	ARC	Ling, A. C.	NCC 2-345	1485
59	STANFORD UNIVERSITY	Sandler, H.	ARC	Harrison, D. C.	NCC 2-126	1613
59	STANFORD UNIVERSITY	Owens, F. C.	HQ-LB	Lyon, R. J.	NGT 05-020-809	1654
59	STATE UNIV NY-BUFFAL	Peck, E. E.	JSC	Farhi, L.	NAS 9-16042	3904
59	ST U NY-DNST MED CTR	Ellis, S.	ARC	Etlinger, J. D.	NAG 2-162	3939
59	TEXAS A&M UNIVERSITY	Juday, R.	JSC	Griswold, N.	NAS 9-17320	4658
59	TEXAS A&M UNIVERSITY	Fraser, B.	JSC	Patton, A. D.	NAS 9-17321	4659
59	TEXAS A&M UNIVERSITY	Duke, M.	JSC	Pandey, R. K.	NAS 9-17322	4660
59	TEXAS A&M UNIVERSITY	Hackler, I.	JSC	Patton, A. D.	NAS 9-17323	4661
59	TEXAS A&M UNIVERSITY	Faget, N.	JSC	Best, F.	NAS 9-17324	4662
59	TEXAS TECH UNIV	Holben, B.	GSFC	Dregne, H. E.	NAG 5-514	4676
59	TEXAS WOMANS UNIV	Woolford, B.	JSC	Zimmerman, W.	NAS 9-17457	4678
59	UNIV ALA-HUNTSVILLE	Fogle, V.	MSFC	Harris, J. M.	NAS 8-35334	1081
59	UNIV ALA-HUNTSVILLE	Yost, V. H.	MSFC	Harris, J. M.	NAS 8-35362	1084
59	UNIV OF ARIZONA	McCollum, G. W.	JSC	Criswell, B. S.	NAS 9-16838	1266
59	UNIV OF ARIZONA	Moore, W. W., Jr.	MSFC	Bier, M.	NAS 8-32950	1262
59	UNIV CALIF-SAN DIEGO	West, J. B.	JSC	Young, W.	NAS 9-16037	1938
59	UNIV CALIF-SAN FRAN	Keil, L. C.	ARC	Ramsay, D. J.	NCC 2-194	1975
59	UNIV CALIF-SAN FRAN	Arnaud, S. B.	ARC	Cann, C. E.	NCC 2-363	1977
59	UNIV CALIF-SAN FRAN	Newkirk, K. E.	JSC	Arnaud, C. D.	NAS 9-16227	1964
59	UNIV CALIF-S BARBARA	Likens, W. C.	ARC	Estes, J. E.	NAG 2-352	1983
59	UNIV CALIF-S BARBARA	Owens, F. C.	HQ-LB	Estes, J. E.	NGT 05-010-802	2007
59	UNIV OF CHICAGO	Browne, I. D.	JSC	Smith, J. V.	NAG 9-106	2553
59	UNIV OF GEORGIA	Tucker, J.	GSFC	Box, E. O.	NAG 5-516	2458
59	UNIV HOUSTON-HOUSTON	Merek, E.	ARC	Cowles, J. R.	NAS 2-11165	4693
59	UNIV HOUSTON-HOUSTON	Sauer, R. L.	JSC	Witte, L. C.	NAS 9-11676	4696
59	UNIV HOUSTON-HOUSTON	Owens, F. C.	HQ-LB	Bell, L.	NGT 44-005-802	4707
59	UNIV ILLINOIS-URBANA	Peck, E. E.	JSC	Voss, E. W.	NAS 9-15328	2628
59	UNIV OF MIAMI	Ellis, S.	ARC	Kerrick, W. G.	NAG 2-150	2384
59	U OKLA-HLTH SCI CTR	Sandler, H.	ARC	Stone, H. L.	NCC 2-24	4290
59	UNIV OF PENNSYLVANIA	Waligora, J. M.	JSC	Lambertsen, C. J.	NAS 9-17238	4437
59	UNIV OF ROCHESTER	Moore, W. W., Jr.	MSFC	Cokelet, G. R.	NAS 8-34892	3953
59	UNIV OF SO FLORIDA	Greenleaf, J. E.	ARC	Spaul, W. A.	NCA 2-1	2400
59	U TEX HLTH SC CTR-DA	Lintott, J.	JSC	Blomquist, C. G.	NAS 9-16044	4811
59	U TEX HLTH SC CTR-DA	Cintron-trevino, N.	JSC	Pak, Y. C.	NAS 9-17194	4813
59	UNIV OF UTAH	Owens, F. C.	HQ-LB	McCoy, R. M.	NGT 45-003-801	4839
59	UNIV OF WYOMING	Matson, P. A.	ARC	Reiners, W. A.	NAG 2-355	5254
59	VIRGINIA COMNWLTH U	Young, W. J.	JSC	Exkberg, D. L.	NAS 9-16046	5028
59	WRIGHT STATE UNIV	Bielstein, H.	HQ-EB	Mohler, S.	NGT 36-024-790	4278

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61	MASS INST OF TECH	Patton, R. M.	ARC	Wurtman, R. J.	NAG 2-132	3124
61	UNIV CALIF-SAN FRAN	Cowings, P. S.	ARC	Kamiya, J.	NCC 2-115	1972
61	UNIV MICH-ANN ARBOR	Haines, R. F.	ARC	Weintraub, D. J.	NCA 2-440301	3415
61	UNIV OF SANTA CLARA	Connors, M.	ARC	Akins, F. R.	NCC 2-49	2056
62	JOHNS HOPKINS UNIV	Patton, R. M.	ARC	Brady, J. V.	NAG 2-139	2888
62	OHIO STATE UNIV	Foushee, H. C.	ARC	Jensen, R.	NCC 2-206	4184
62	UNIV TEXAS-AUSTIN	Patton, R. M.	ARC	Helmreich, R. L.	NAG 2-137	4732
62	UNIV TEXAS-AUSTIN	Foushee, H. C.	ARC	Helmreich, R. L.	NCC 2-286	4768
62	WAYNE STATE UNIV	Hart, S. G.	ARC	Frankel, R. M.	NCC 2-230	3431
62	YALE UNIVERSITY	Foushee, H. C.	ARC	Hackman, J. R.	NCC 2-324	2239
69	ARIZONA STATE UNIV	Voorhees, J. W.	ARC	Damos, D. L.	NAG 2-217	1130
69	ARIZONA STATE UNIV	Hart, S. G.	ARC	Damos, D. L.	NCC 2-202	1166
69	ARIZONA STATE UNIV	Hartzell, E. J.	ARC	Homa, D.	NCC 2-263	1167
69	BOSTON UNIVERSITY	Powell, C. A.	LARC	Hellman, R. P.	NSG 1644	3066
69	CAL STATE U-HAYWARD	Hartzell, E. J.	ARC	Klapp, S. T.	NCC 2-223	1398
69	CAL STATE U-HAYWARD	Cohen, M. M.	ARC	Stoper, A. E.	NCC 2-318	1399
69	COLLEGE OF WM & MARY	Pope, A. T.	LARC	Null, C. H.	NCC 1-78	4891
69	GEORGIA INST OF TECH	Palmer, E. A.	ARC	Rouse, W. B.	NAG 2-123	2418
69	ISRAEL INST OF TECH	Hart, S. G.	ARC	Gopher, D.	NAGW 494	5278
69	MASS INST OF TECH	Hart, S. G.	ARC	Sheridan, T.	NAG 2-227	3129
69	NEW MEX ST U-LAS CR	Remington, R. W.	ARC	Paap, K. R.	NCC 2-306	3679
69	NO CAR A&T STATE U	Nagel, D. C.	ARC	Pulat, B. M.	NCA 2-22	3975
69	NO CAR A&T STATE U	Billings, C. E.	ARC	Pulat, P. S.	NCA 2-23	3976
69	NO CAR A&T STATE U	Nagel, D. C.	ARC	Ram, B.	NCA 2-24	3977
69	OHIO STATE UNIV	Hartzell, E. J.	ARC	Miller, R. A.	NAG 2-195	4161
69	PURDUE UNIVERSITY	Hartzell, E. J.	ARC	Schmidt, D. K.	NCC 2-245	2708
69	PURDUE UNIVERSITY	Hart, S. G.	ARC	Kantowitz, B. H.	NCC 2-349	2711
69	SAN JOSE STATE UNIV	Stewart, J. D.	ARC	Plant, W. T.	NCC 2-35	1461
69	SAN JOSE STATE UNIV	Hartzell, E. J.	ARC	Plant, W. T.	NCC 2-37	1462
69	SAN JOSE STATE UNIV	Nagel, D. C.	ARC	Plant, W. T.	NCC 2-327	1484
69	STANFORD UNIVERSITY	Palmer, E. A.	ARC	Pavel, M.	NAG 2-269	1501
69	STANFORD UNIVERSITY	Ahumada, A. J., Jr.	ARC	Karamcheti, K.	NCC 2-44	1607
69	STANFORD UNIVERSITY	Tanner, T. A.	ARC	Calfee, R. C.	NCC 2-215	1618
69	STANFORD UNIVERSITY	Nagel, D. C.	ARC	Wandell, B. A.	NCC 2-307	1631
69	STANFORD UNIVERSITY	Ahumada, A. J.	ARC	Wandell, B.	NCC 2-332	1634
69	UNIV CALIF-BERKELEY	Bucher, N. M.	ARC	Hardyck, C. D.	NAG 2-338	1666
69	UNIV CALIF-BERKELEY	Remington, R.	ARC	Hardyck, C. D.	NCA 2-50403	1721
69	UNIV CALIF-DAVIS	Clearwater, Y. A.	ARC	Harrison, A. A.	NAG 2-357	1757
69	UNIV CALIF-IRVINE	Ahumada, A. J., Jr.	ARC	Yellott, J. I.	NCA 2-5	1787
69	UNIV CALIF-IRVINE	Ahumada, A. J., Jr.	ARC	Yellott, J. I.	NCA 2-345301	1788
69	UNIV CALIF-L ANGELES	Hart, S. G.	ARC	Lyman, D. J.	NAG 2-216	1797
69	UNIV OF FLORIDA	Patton, R. M.	ARC	Lang, P. J.	NAG 2-234	2358
69	UNIV ILLINOIS-URBANA	Hart, S. G.	ARC	Wickens, C. D.	NAG 2-308	2607
69	UNIV OF MIAMI	Curry, R. E.	ARC	Wiener, E. L.	NCC 2-152	2394
69	UNIV OF NEVADA-RENO	Hartzell, E. J.	ARC	Harrington, T. L.	NCC 2-249	3572
69	UNIV OF NEVADA-RENO	Remington, R. W.	ARC	Harrington, T. L.	NCC 2-272	3573
69	UNIV OF NEVADA-RENO	Remington, R. W.	ARC	Harrington, T. L.	NCC 2-273	3574
69	UNIV OF TORONTO	Hart, S. G.	ARC	Moray, N.	NAGW 429	5268
69	UNIV OF WASHINGTON	Clearwater, Y. A.	ARC	Wise, J.	NAG 2-346	5106
71	UNIV OF NEW ORLEANS	Quattrochi, D. A.	NSTL	Wang, S. C.	NAS13-231	2871
71	UNIV OF NEW ORLEANS	Howard, S. A.	NSTL	Wang, S. C.	NAS13-266	2872
72	GEORGETOWN UNIV	Winblade, R. L.	HQ-RT		NASW 4063	2290
72	UNIV CALIF-SAN DIEGO	Milov, L. A.	ARC	Zocco, D. P.	NCA 2-68	1943
73	RICE UNIVERSITY	Grotberg, M.	JSC	Van Helden, A.	NAS 9-16773	4598
73	TEXAS A&M UNIVERSITY	Vogelwede, K. E.	HQ-NI	Nicks, O. W.	NASW 3557	4663
73	UNIV HOUSTON-HOUSTON	Owens, F. C.	HQ-LE	Melosi, M.	NGT 44-005-807	4712
73	UNIV HOUSTON-CL LAKE	Waldrup, W.	JSC	Bilstein, R.	NAS 9-17369	4721
79	CAL STATE U-NRTHRDGE	Tanner, T. A.	ARC	Bluth, B. J.	NAG 2-255	1403
79	CAL STATE U-SACRAMEN	Tanner, T. A.	ARC	Sparks, P. M.	NCC 2-310	1408
79	SO CAL INST OF ARCH	Cohen, M. M.	ARC	Nixon, D. A.	NCC 2-356	1487

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79	UNIV MICH-ANN ARBOR	Marsik, S. J.	LERC	Roberts, A. F.	NAG 3-185	3362
99	BOWIE STATE COLLEGE	Chapman, J. W., Jr	GSFC	Kirksey, C. H.	NGT 21-027-012	2881
99	CAL STATE U-CHICO	Bondurant, L.	LERC	Lewis, M. R.	NAS 3-22172	1394
99	COLLEGE OF WM & MARY	Prior, E. J.	LARC	Unavailable	NAS 1-17303	4882
99	CORNELL UNIVERSITY	Boggess, N. W.	HQ-EZ	Harwit, M.	NAGW 761	3789
99	GEORGIA INST OF TECH	Buehler, K.	KSC	Desai, P. V.	NAG10-17	2431
99	GEORGIA INST OF TECH	Lee, R. B.	LARC	Freeston, W. D.	NAS 1-17545	2436
99	HARVARD UNIVERSITY	Esenwein, G. F.	HQ-EE	Parkinson, W. H.	NASW 3940	3095
99	HOWARD UNIVERSITY	Owens, F. C.	HQ-LB	Fan, D. N.	NGT 09-011-060	2309
99	MORGAN STATE UNIV	Friedmen, D. S.	GSFC	Taylor, J.	NCA 5-104	2924
99	OHIO STATE UNIV	Devincenzi, D. L.	HQ-EB	Kraus, J. D.	NAGW 750	4180
99	OKLAHOMA STATE UNIV	Bilbrough, L.	HQ-LF	Wiggins, K.	NASW 3313	4282
99	OKLAHOMA STATE UNIV	Bilbrough, L. B.	HQ-LF	Wiggins, K. E.	NASW 4000	4283
99	OLD DOMINION UNIV	Huffman, J. P.	LARC	Stohrer, F. F.	NAS 1-16537	4953
99	PURDUE UNIVERSITY	Hart, S. G.	ARC	Kantowitz, B. H.	NCC 2-235	2706
99	SAN FRAN STATE UNIV	Tomberlin, K. A.	ARC	Eisenberg, L.	NCA 2-660401	1438
99	SAN FRAN STATE UNIV	Tomberlin, K. A.	ARC	Eisenberg, L.	NCA 2-660501	1441
99	SOUTHEASTN OKLA ST U	Bivins, R. G.	HQ-IU	McRovey, T. J.	NASW 3919	4286
99	SOUTHEASTN OKLA ST U	Bivins, R. G.	HQ-LG	Harmon, J.	NASW 3659	4285
99	SO UNIV & A&M COL-BR	Smith, J.	HQ-NS	Unavailable	NASW 3846	2864
99	STANFORD UNIVERSITY	Colin, L.	ARC	Petrosian, V.	NCC 2-322	1632
99	STANFORD UNIVERSITY	Butler, D. M.	HQ-EE	Banks, P. M.	NAGW 572	1534
99	UNIV ALA-UNIVERSITY	Curreri, P. A.	MSFC	Stefanescu, D. M.	NAS 8-36193	1107
99	UNIV OF ARIZONA	Gordon, F., Jr.	GSFC	Slater, P.	NAS 5-27382	1261
99	UNIV OF ARIZONA	Wesenberg, R.	KSC	Krider, E. P.	NAS10-11228	1273
99	UNIV CALIF-BERKELEY	Billingham, J.	ARC	Shu, F.	NCC 2-36	1726
99	UNIV CALIF-BERKELEY	Ellis, S. R.	ARC	Stark, L.	NCC 2-86	1727
99	UNIV CALIF-L ANGELES	Dietrich, J. W.	JSC	Depaolo, D. J.	NAG 9-15	1819
99	UNIV CALIF-SAN DIEGO	Herman, D. H.	HQ-S	Arnold, J. R.	NAGW 629	1917
99	UNIV CALIF-S BARBARA	Owens, F. C.	HQ-LB	Dozier, J.	NGT 05-010-803	2008
99	UNIV OF CHICAGO	Rosendhal, J. D.	HQ-E	Meyer, P.	NGL 14-001-258	2580
99	UNIV OF CHILE	Force, C. A.	GSFC	Diaz, E.	NAS 5-1925	5271
99	UNIV OF DENVER	Ault, L. A.	HQ-LG	Chapman, R.	NASW 3466	2209
99	UNIV OF FLORIDA	Cerrato, R. I.	KSC		NAS10-11188	2373
99	UNIV HOUSTON-HOUSTON	Mason, J.	JSC	Bell, L.	NAS 9-16593	4697
99	UNIV HOUSTON-HOUSTON	Heselmeyer, R.	JSC	Hunsucker, J. L.	NAS 9-17315	4699
99	UNIV HOUSTON-HOUSTON	Goodrich, W.	JSC	Tezduyar, T. E.	NAS 9-17380	4700
99	UNIV HOUSTON-CL LAKE	Garman, J. R.	JSC	McKay, C. W.	NAS 9-17010	4718
99	UNIV OF KENTUCKY	Bivins, R. G.	HQ-LG	Roeder, P. W.	NASW 3367	2841
99	UNIV OF MAINE-ORONO	Geib, D.	HQ-EB	King, G. M.	NAGW 607	2874
99	UNIV MARYLAND-COL PK	Truskowski, W.	GSFC	Rieger, C. S.	NAS 5-25764	2990
99	UNIV OF NEW MEXICO	Bivin, R. G., Jr.	HQ-LG	Morain, S. A.	NASW 3863	3683
99	UNIV OF SANTA CLARA	Margozzi, A. P.	ARC	Greeley, R.	NCC 2-60	2057
99	UNIV TENNESSEE-KNOXV	Abbott, K. H.	ARC	Ali, M.	NAG 1-513	4521
99	UNIV TEXAS-DALLAS	Gaskins, M. A.	HQ-E	Hanson, W. B.	NGL 44-004-130	4800
99	UNIV WISC-MADISON	Boese, R. W.	ARC	Sromovsky, L. A.	NAS 2-12078	5219
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99	VIRGINIA POLY INST	Prior, E. J.	LARC	Unavailable	NAS 1-17100	5081
99	WORCESTER POLY INST	Yarbrough, L. S.	MSFC	Tuler, F. R.	NAG 8-504	3316

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